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ABSTRACT

Eugene (OR) School District 4J is experiencing declining enrollments on a district-wide basis, but these declines have not been evenly distributed throughout the district. Schools in the Central city and older neighborhoods are experiencing declines, while schools in newer neighborhoods at the periphery are generally more crowded. At some future time, District 4J may have to decide to build new schools in some areas and close schools in others. Theories for social demography, urban studies, urban socioeconomic structure, neighborhood change, and land use, and data from population surveys, new housing surveys, local land use plans, building permits, and post school enrollment are used as a basis for recommendations. Recommendations for action include the acquisition of a site on Goodpasture Island, the selling of two older sites, and the involvement of school district personnel in local land use planning activities. (Author/BW)

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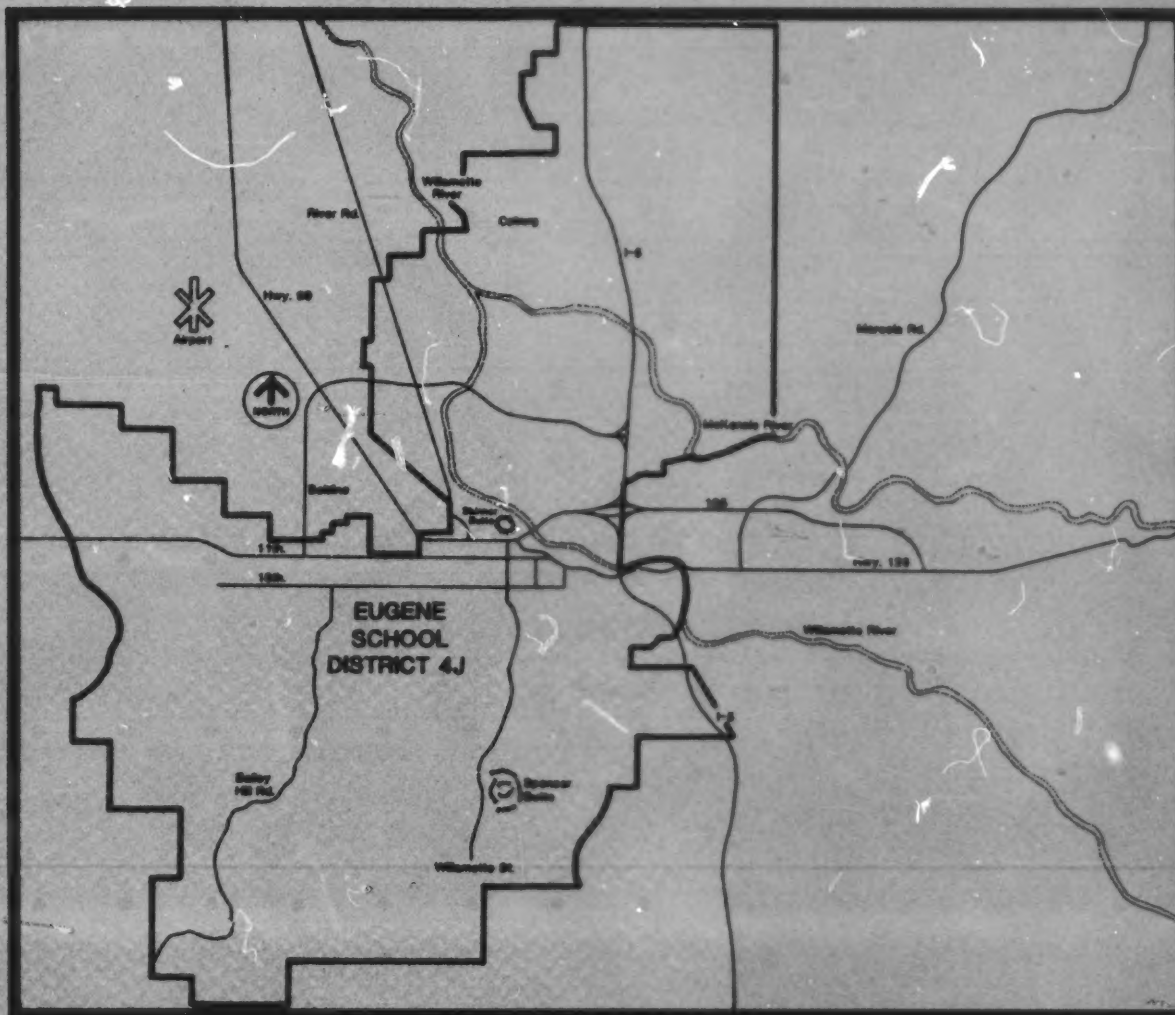
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SCHOOL DISTRICT 4J FACILITIES SITING REPORT 1979



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SCHOOL DISTRICT 4J
FACILITIES SITING REPORT
1979

December, 1979

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School District 4J Facilities' Summary

By: Lois Dorn

School District 4J currently faces two separate but interrelated enrollment problems. It is experiencing declining enrollments on a district-wide basis while simultaneously facing a mismatch between the location of students requiring school services continues to diminish, the decreased enrollments have not been evenly distributed throughout the district.

Schools in the central city and older neighborhoods are most severely affected by declining enrollments. While the decreased birth rates have lowered school enrollments overall, population migration and settlement patterns have made the decline severe in these neighborhoods. In contrast, the schools located in newer neighborhoods at the periphery are generally more crowded, some operating in excess of their program capacity. Thus, the district must deal with the problem of declining enrollments and a "capacity dilemma" resulting in the disparity between the location of students and of school space.

Reflecting a national trend, school enrollments in School District 4J peaked in 1969 and have been steadily and dramatically dropping ever since. The district has experienced a steady decline in the number of students enrolled in grades one through six since 1969, and enrollments in kindergartens have been declining since their institution in 1974. According to an L-COG survey of enrollment trends for elementary schools during 1970-77, only ten of the district's 43 schools had not experienced a decline in enrollment. The six elementary schools not declining were Ambrey Park, Bailey Hill, McCornack, Condon, Edison, and Magladry. All other elementary schools either declined enrollments or maintained a stable level. The impact of declining elementary enrollments has also hit the junior high and high schools and will continue to do so for the next 4-6 years. By all indications, the overall decline will continue until the mid-1980's when enrollments may begin to rise again slowly.

Declining enrollment district-wide, or operating a school under capacity presents numerous problems to the district. Some of the many issues affected by declining enrollments in Eugene include state aid, educational costs, teacher hiring and layoffs, community support of schools, equality of educational opportunity, possible school closures, the comprehensive high school, and even teacher inservice training. As enrollment declines, cost per pupil increases and the amount of aid calculated on a per pupil basis decreases.

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The most obvious source of future enrollment pressure stems from the overall growth in the local population and economy. Changes in land use, housing policies or population growth occurring outside of 4J's boundaries may have a significant impact on residential settlement patterns, and may thus influence student enrollments within the district. Therefore, it is pertinent to look at 4J in its larger political and economic context in Lane County and within the Eugene-Springfield metropolitan area.

Theories of social demography and urban theories are useful, respectively, in predicting demand for school services at a district-wide level and in analyzing differences in enrollment within the district. Chapter 3 points out that the most compelling theory of declining enrollment is the theory of deferred child bearing, or women postponing having children.

Currently, an unusually large number of women are of reproductive age as a result of the "baby boom" of the 1950's. When these women decide they cannot postpone having children any longer, and start to fulfill their stated child bearing expectations, demographers predict an increase in births will take place. The impact will be felt in school enrollments.

Shifts in population from one locale to another can also have a profound effect on enrollments in a local school district. In Eugene, indications exist that out-of-state migration affects not only the levels of enrollments, but the spatial distribution of these enrollments. Most migrants tend to settle in new housing found at the periphery, thus increasing enrollments in those schools.

Thus, indications are very strong that enrollments in District 4J will not continue to decline but instead will rise by the mid-1980's due to a combination of the following factors. First, fertility rates are expected to rise in the very near future. Second, even if fertility rates do not increase, the number of women of reproductive age will increase through the next decade as the younger of the baby boom women come of age. Third, migration into the Eugene-Springfield area is expected to continue and to account for more than half of the projected population increase.

At some time in the not too distant future, District 4J may have to decide to build new schools in some areas and close schools in others. Thus, the dynamics that underly the location of children within a school district have important policy implications, which are discussed in Chapter 4.

In Eugene, a survey of new housing indicated that 26.1 percent of respondents moved to their detached single family home because of a need for more living space. Furthermore, a significant relationship was found to exist between the amount of space in a unit and the number of children. Life-cycle theories, which place an emphasis on childrearing, have important implications for school enrollments.

Single family units are generally found at some distance from the center of urban areas. On the other hand, higher density multi-family units, many of which house students and couples without school children, are usually found near the center. This homogenous concentration yields declining enrollments in central areas where single family homes are being converted to higher uses, and increasing enrollments at the periphery.

Theories of urban socio-economic structure (namely, income) are also useful in explaining and predicting differences in enrollment in various parts of the district.

Enrollments in both Bethel and Springfield school districts have increased overall in recent years, while enrollments in District 4J have declined. An examination of the different enrollment patterns in these three metropolitan school districts indicates that people in Bethel and Springfield have more children per household than Eugene; Springfield residents also pay less per month on housing than people in Eugene. Since people who have children have less money to spend on housing, it follows that households with children will seek cheaper housing.

The implications for District 4J are clear. If housing costs in Eugene continue to soar, Bethel and Springfield may become increasingly attractive to young families. Continued metropolitan growth, either through immigration or increase in the fertility rate, may not boost enrollments in District 4J but may, instead, result in disproportionately large increases in Bethel and Springfield.

Theories of neighborhood change also have relevance to variations in enrollment. Neighborhood maturation, a process whereby enrollments in a local school decline as a neighborhood ages, may be a viable concept in Eugene. The proportion of new single family homeowners in Eugene is double that of Bethel. This implies that neighborhoods in Eugene are likely to be more stable and the impacts of neighborhood maturation more severe than in Bethel. Severe maturation, for example, is strongly associated with the single family housing type. The existence of attached townhouses in a neighborhood may mitigate the impacts of maturation, while declining fertility rates will probably decrease the time span between initial settlement of a neighborhood and marked decline in neighborhood schools.

The theory of neighborhood succession, which does not seem to fit Eugene, implies that once children of the initial settlers of a neighborhood have moved through the schools, these initial settlers will move out and be replaced by a new generation of young families. Neighborhood conversion, on the other hand, is a more viable concept. It occurs when the structures and land in a neighborhood are converted to other uses, such as business offices. If conversion of this kind does occur, the demand for school services in neighborhoods near the central business district may disappear entirely.

Of the many variables involved in predicting and managing the intra-district distribution of demand for school services, land use planning is perhaps the most important. Chapter 5 explains how District 4J is active in the land use planning process and gives a summary of how current land use plans effect the school district.

Many good reasons exist for the school district to be actively involved in the land use planning process. For one thing, the district can estimate the impact of a specific development on the local schools and make specific recommendations about whether the school can accommodate the children, how the students will be transported to schools, and whether design problems might interfere with the safety of the children on their way to school.

One of the most significant land use plans affecting 4J is the 1990 Metropolitan Plan. The land use designations that place residential land near existing facilities, near schools projected to have continuing declining enrollments, or which otherwise minimize potential busing distance, will be the most favorable.

The impact on all three school districts should also be considered. Bethel currently has a high rate of residential development and increasing enrollments. Springfield has declining enrollments in its central city schools, increasing enrollments in outlying areas and, therefore, shares Eugene's capacity dilemma. The three school districts have taken the stand that the most compact urban form is desirable, and an even distribution of residential growth between the three districts would facilitate the future provision of school services.

Two other land use plans affect the school district: the city of Eugene policies and Lane County policies with the sub-area plans at Spencer Creek, Willamette/Long Tom and Mohawk Camp Creek. The city's proposed policy of coordinating growth management with existing school facilities allows for the most efficient use of existing facilities and recognizes the capacity dilemma problem of schools at the periphery.

Current land use policies of Lane County seek to concentrate growth and development within existing communities. If these policies are relaxed, a trend towards the rural residential lifestyle could be stimulated and create additional students within the 4J district. The dispersed nature of such development would require substantial and expensive busing of students.

Given the close relationship between new residential development and the demand for school services, it is clearly in the school district's interests to monitor such development and to plan to accommodate the projected impacts of such development. The purpose of Chapter 6 is to describe school district efforts to do this.

Building permit data are the best indicators of current development activity. Considerable single family building permit activity since 1976 has occurred in northeastern, southeastern, south, and the southwestern periphery of Eugene. Also, most new multi-family building activity appears to be focused in central neighborhoods and in west Eugene. Considerable multi-family activity is also occurring in the Willagillespie attendance area.

If residential development is closely related to enrollments in local schools, then the following schools are likely to experience enrollment pressures in the next 1-5 years: Willagillespie, Gilham, and Bailey Hill. Other schools at which increases in enrollments can be expected include Ellis Parker, Fox Hollow, Crest Drive, Laurel Hill, Harris and Willakenzie.

The methodology that has been developed for long term projections involves the use of land use variables to predict enrollment trends for elementary schools by 1990. The first step in this method is to analyze historical enrollment data and to identify existing trends in enrollment. The second step is to link enrollment trends to neighborhood characteristics.

Several limitations exist for the above methodology, but its major strength is that the land use variables used to predict enrollment trends can be related to the theory of neighborhood maturation. Furthermore, the empirical evidence strongly suggests that neighborhood maturation is the most relevant of the neighborhood theories in Eugene. Intelligent use of the technique should contribute markedly to the ability of the district to plan facilities.

As noted in Chapter 7, both the Bureau of Census and 4J Research Specialist, Charles Stephens project that the trend of declining enrollments will reverse itself after the mid-1980's. The location of these students will directly influence the provision of school services.

The most obvious and immediate solution to the current disparity in enrollments is to bus students from crowded schools to schools where excess space is available. However, transportation costs, including the escalating costs of fuel and maintenance of buses, must be taken into consideration.

Expansion of facilities to increase program capacity can be accomplished by the use of portable units or permanent structural additions. As with busing, however, their costs should be analyzed.

The district might also look at ways to utilize excess space. This can be accomplished by improving programs, establishing magnet programs and reorganizing grade structure.

Other options for balancing enrollments include expanding program capacity in existing schools, reorganizing space, going on half-day schedules, considering new construction, and changing boundaries among attendance areas. Closing a school, a politically and emotionally sensitive

action, ought to be used as a last resort. Leasing or selling school buildings or properties might be considered. Finally, the district can become an active participant in the urban development process.

Chapter 8 examines in detail three specific problems that have the potential for creating major problems for the district in the future.

First to be discussed is the phenomenal residential development in the Willagillespie attendance area and particularly the Goodpasture Island area. In 1979, Greg Byrne, then a member of RD&E's planning staff, completed and updated an in-depth cost analysis of various strategies for providing school services to the Goodpasture Island areas. He pointed out the problem of predicting the number of children that might be generated by such development. Whether to bus children from the island or build a new school there, he concluded, is the essence of the problem. Byrne's estimates show that, initially, busing will be the cheaper of the options. After 1983, however, busing costs will exceed construction costs and this divergence increases up to 1990. Byrne recommends that the school district purchase a site on Goodpasture Island and then wait to see if residential development materializes, which he asserts is very likely. Alternately--and the planning section of RD&E concurs--the district should trade its Bond Lane site in the Willagillespie area for a site on Goodpasture Island. The Bond Lane site is well suited for residential development and developers have, in the past, shown interest in it.

The second problem discussed in Chapter 8 is the effects of the building moratorium in the North Region and potential impacts of lifting the ban on building. Growth and development in the area is currently constrained because of septic tank problems.

Clearly, lifting of the moratorium would be beneficial from the school district's point of view. However, if none of the moratoria are lifted, and neighborhood succession does not occur, then enrollments will probably continue to decline and school closure may become a very real possibility. However, a strong possibility exists that sewer problems in the area will be resolved, which has important implications for District 4J. It is recommended that the school district become more actively involved in the decision-making process than has been the case in the past.

The final problem discussed is the impact of the city's annexation of large portions of land in the Willakenzie area on the distribution of enrollments in District 4J. The island annexations and concurrent rezoning to R-1 and R-2 have substantially increased the supply of vacant buildable land suitable for residential development. The effect of the annexations on the school district is dependent upon several factors: the rate at which residential development occurs, the type of development which occurs (single family versus multi-family), and the rate and type of development occurring on other properties in the area.

The final chapter offers conclusions and recommendations as follows:

Recommendations for further research into the demand for school services include 1) an in-depth study of what happens to enrollments in a neighborhood after it has matured; 2) refinement of the methodology used to project long-term trends for small geographic areas; 3) a study of the changes in child bearing in Eugene; and 4) a study of the changing location of multi-family housing in Eugene and its implications for the distribution of enrollments.

Recommendations for policy and the district's approach to facilities planning include 1) evaluating problems created by the capacity dilemma on a case-by-case basis, considering new school construction if necessary; 2) remaining open to the possibility of both decline or increase in enrollments; 3) staying actively involved in land use planning and in development of local government comprehensive plans, and 4) staying actively involved in the review process of residential development.

Finally, recommendations for action are as follows: 1) acquire a site on Goodpasture Island and then adopt a wait-and-see attitude before building a new school; 2) either sell the Bond Lane site or trade it for a better located site on Goodpasture Island; 3) sell the McKay site; 4) insure that participants in decision-making for the River Road/Santa Clara moratoria are aware of its implications for the school district; and 5) endorse a mixture of residential types in major development applications for the Willakenzie Islands.

CHAPTER I

INTRODUCTION

FACILITIES SITING REPORT

INTRODUCTION

In these times of inflation and fiscal conservatism, the efficient use, management and siting of school district facilities is of paramount importance. Careful planning to accommodate and even orchestrate changes in demand for school services in various parts of the district can result in substantial savings. The district currently faces some thorny problems regarding the provision of school services and indications are that some very difficult decisions may have to be made in the not too distant future. The major purpose of this report is to provide some of the theoretical and empirical work upon which difficult decisions may have to be based. The report also draws attention to some important issues which warrant prompt action.

This report is made in response to the continuing board goal which states that "The district will study the existing condition and use of school facilities, the changing distribution of student population, optional uses of school properties and develop a long-range plan for action." This goal appears in both the 1978-79 Board Goals (Goal #9) and in the 1979-80 Board Goals (Goal #8). This report is a step toward the fulfillment of that goal. This report summarizes a wide body of information which will be crucial for the decisions which will have to be made in the formulation of long-range plans. It should be emphasized that this report does not constitute a plan. It should not be interpreted as a document deserving the legal status of a comprehensive plan, nor should it be interpreted as a document which indicates the policy of the school board of School District 4J. This report is a first step in the decision-making process. Its major purpose is to provide the base of information for decision-making. Information other than that in this report is also necessary, and the program of research continues during the 1979-80 school year.

Making decisions which affect the distribution and availability of school services and facilities is a complex task. Knowledge of the relationship between the availability of existing school facilities and the demand for those services is essential. Eugene Public School District 4J is, for example, currently characterized by a locational mismatch between the siting of schools and the location of school-age children. A further requirement is an understanding of the processes which have given rise to the current situation. Such an understanding allows prediction of future trends of changes which is a necessary prerequisite for planning. Finally, the decision maker should be aware of the range of options that are available for dealing with existing or anticipated problems. Much of the knowledge necessary for successful decision making with respect to facilities siting, use, and management is scattered among a wide variety of sources and across the boundaries of a number of disciplines. A major emphasis of this report is to draw this information together into a single source which anyone involved in district facility decision making can use.

easily. The report is not meant, however, to provide all the answers to planning issues. Our purpose is to identify issues, focus debates, and provide information. We do, however, make some very specific recommendations for dealing with specific problems.

The overall organization of the report reflects our concern with providing information relevant to the decision-making process. Including this introduction, the report is comprised of nine chapters. Chapter 2 is an essentially descriptive chapter in which contextual information about the district is provided. District 4J school facilities are described in relation to the demand for those facilities. It is worth noting at the outset that by "demand for school services" we mean the number of school age children for whom school services must be provided. Enrollments at individual schools are used as indicators of the magnitude of demand at different locations within the district. A number of problems resulting from the locational mismatch of district facilities and the demand for school services are identified in Chapter 2.

Chapters 3 and 4 deal specifically with the demand for school services. Two components of this demand are examined. First, the overall district-wide demand is examined. Socio-demographic theory explaining district-wide decline in enrollments is discussed. There is some speculation about possible changes in the the current declining enrollment trend. The relevance of changes in population to the demand for school services is considered. The second component of the demand that is examined in some detail in Chapter 4 is the distribution of demand within the district. Variations in enrollments throughout the district are explained in terms of urban theory from a number of disciplines. The relationship between selected socio-economic variables and enrollments is examined and various parts of the district are characterized in terms of these variables. Processes underlying enrollment variations are described and their implications for the future elaborated.

In Chapter 4, a link is made between the management of land by local governments and the distribution of demand for school services within the district. The land use planning of local governments is considered so important that a separate chapter is devoted to it. This is the substance of Chapter 5. The use of land in District 4J is governed by a number of land use plans, each of which is briefly described. Implications of these plans for the school district are elaborated.

The relationship between new residential development and enrollments in local schools is established in the chapter dealing with the demand for school services. In Chapter 6, we pursue this relationship further. Building permit data are used to describe new development activity in the district. Development application data are used to predict short term (1-5 years) residential development activity. New residential development is found to correlate strongly with enrollment pressures in neighborhood schools. Schools in which enrollment pressures are likely to be felt in the

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near future are identified. Also described in this chapter are school district efforts to develop a methodology for predicting enrollment trends in individual schools 10 to 15 years down the road. The phasing of new residential development through time is an integral part of this methodology. Results of the application of the methodology in Eugene are outlined.

Chapter 7 outlines a number of options for dealing with problems created by the mismatch between the demand for school services and the location of school facilities. This mismatch is commonly referred to as the "capacity dilemma." Some of the options discussed include busing, double shifting, boundary changes, new school construction and active participation in local land use planning. Problems of school closure and use of excess space are also discussed.

In Chapter 8, we focus on a number of special issues identified in earlier chapters. These issues are isolated because they require fairly prompt action on the part of the school district or have the potential to create major problems for the district. The problem of providing school services to children produced by recently proposed residential development of Goodpasture Island is the first of the issues examined. This is followed by an analysis of the potential impacts on District 4J of the lifting of certain moratoria restricting residential development in the River Road/Santa Clara area. Other issues discussed include potential problems that might arise because of the annexation of large parcels of land for residential use in the Willakenzie area and the constraints on growth in South Eugene imposed by the South Hills study. Finally, in Chapter 9, we summarize the major conclusions and recommendations of the report.

CHAPTER II
SCHOOL DISTRICT 4J,
AN OVERVIEW

CHAPTER II

SCHOOL DISTRICT 4J, AN OVERVIEW

This chapter is essentially descriptive in nature. Its purpose is to "set" the stage describing the district's facilities in relation to the demand of these facilities. Major problems and issues are identified but no in-depth analysis is attempted. The interplay and relationships between factors giving rise to these problems are explored in subsequent chapters. The chapter is divided into two sections.

The first section provides a macro level view of the district and places it in its regional and metropolitan context. The purpose of this section is to provide contextual information and to show that the demand for school services within the district is related and influenced by processes which do not necessarily coincide with the district boundaries. Enrollments in District 4J, for example, are influenced by the nature of the metropolitan housing market, both within and outside the district's boundaries.

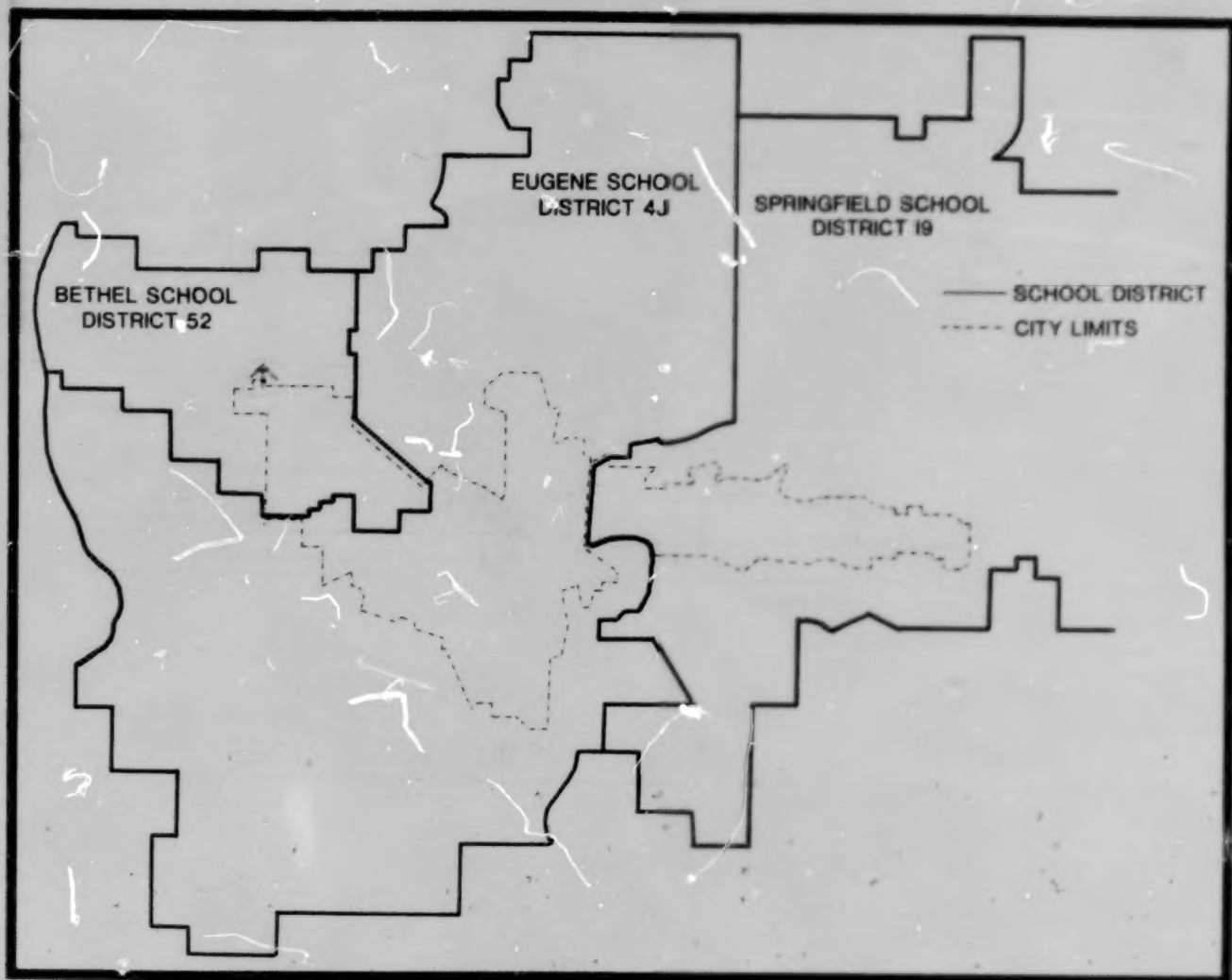
The second section focuses on the nature, size, and distribution of school district facilities. The fit between the distribution of these facilities and the distribution of school age children is examined and a mismatch is identified district-wide decline in enrollments is described and its implications for the school district briefly noted. While the emphasis in this section is on District 4J, comparisons with other metropolitan school districts are made where appropriate.

School District 4J: Regional and Metropolitan Context

School District 4J is one of three school districts within the Eugene-Springfield metro area. It encompasses a land area of 155 square miles which includes the city of Eugene, city of Coburg, a small portion of Springfield and unincorporated areas of Lane County adjacent to these cities. Physically, the district extends westerly to Fern Ridge Reservoir, south past Spencer's Butte, east to Interstate 5, and north past Coburg.

School District 4J is bounded on the east by the Springfield School District and on the northwest by the Bethel School District. The arrangement of these neighboring school districts with respect to each other, the Eugene-Springfield metro area and the county is shown on Map 1.

While School District 4J is predominantly an urban school district serving the metro Eugene area, it does not encompass the city of Eugene entirely. The Bethel School District, which borders the northwest portion of District 4J, includes the northwest quadrant of Eugene. This area, commonly referred to as the Bethel-Danebo area, contains a large amount of vacant land zoned for residential use. Development in this area has



MAP 1 SCHOOL DISTRICTS IN THE EUGENE-SPRINGFIELD AREA

generally been aimed at the moderate income family housing market. As a result, school enrollments in Bethel District have been steadily increasing. It is important to recognize that the availability of moderately priced housing, and land use policies which support the attraction of families to this area, will have a significant influence on enrollments in the adjacent 4J District.

School District 4J boundaries also extend east to include a small portion of Springfield and the unincorporated area lying immediately north of Springfield. Enrollments in the Springfield School District have also been steadily increasing during the past decade. Housing developments north

of the city of Springfield, generated by the continued economic growth of Springfield and the metro area, may create additional students within this area of the 4J School District.

Changes in land use, housing policies or economic growth both within and outside 4J's boundaries affects both the magnitude and location of population increases within the district. Therefore, it is pertinent to place 4J in its larger political and economic context.

Perhaps the most obvious source of future enrollment pressure is the overall growth of the local population. For the past eight years, the population in Lane County has grown at a steady rate of 2.7% per year and is projected to reach almost 380,000 people by the year 2000. This reflects a more than 50% increase in population since 1960. The increases in the county population have been channeled into the cities and much of that growth has been concentrated in the Eugene-Springfield metropolitan area and into nearby communities. Overall growth in Lane County between 1970 and 1978 was 21.8% (Portland State University Center for Population Research). All incorporated areas except Coburg (which is within District 4J) and Dunes City grew at a faster rate. Growth rates exceeding 50% were recorded in Springfield, Veneta, Florence and Creswell. Unincorporated areas, on the other hand, have grown in population by only 0.5% since 1970. Population growth in Eugene has varied between 4% and 5% per annum since 1970 and the population of this city is projected to reach 173,000 by the year 2000. Approximately 70% of Lane County's growth has been due to in-migration. Population growth in the county is expected to continue but the rate of growth is expected to fall slightly below 2.0% per annum because of decreased rates of in-migration associated with a slowing of economic growth.

The variability in the growth rate correlates strongly to employment trends, with a two to three year lag. Growth in employment opportunities in Lane County and Eugene are projected to continue, though at a slower rate, to the year 2000.

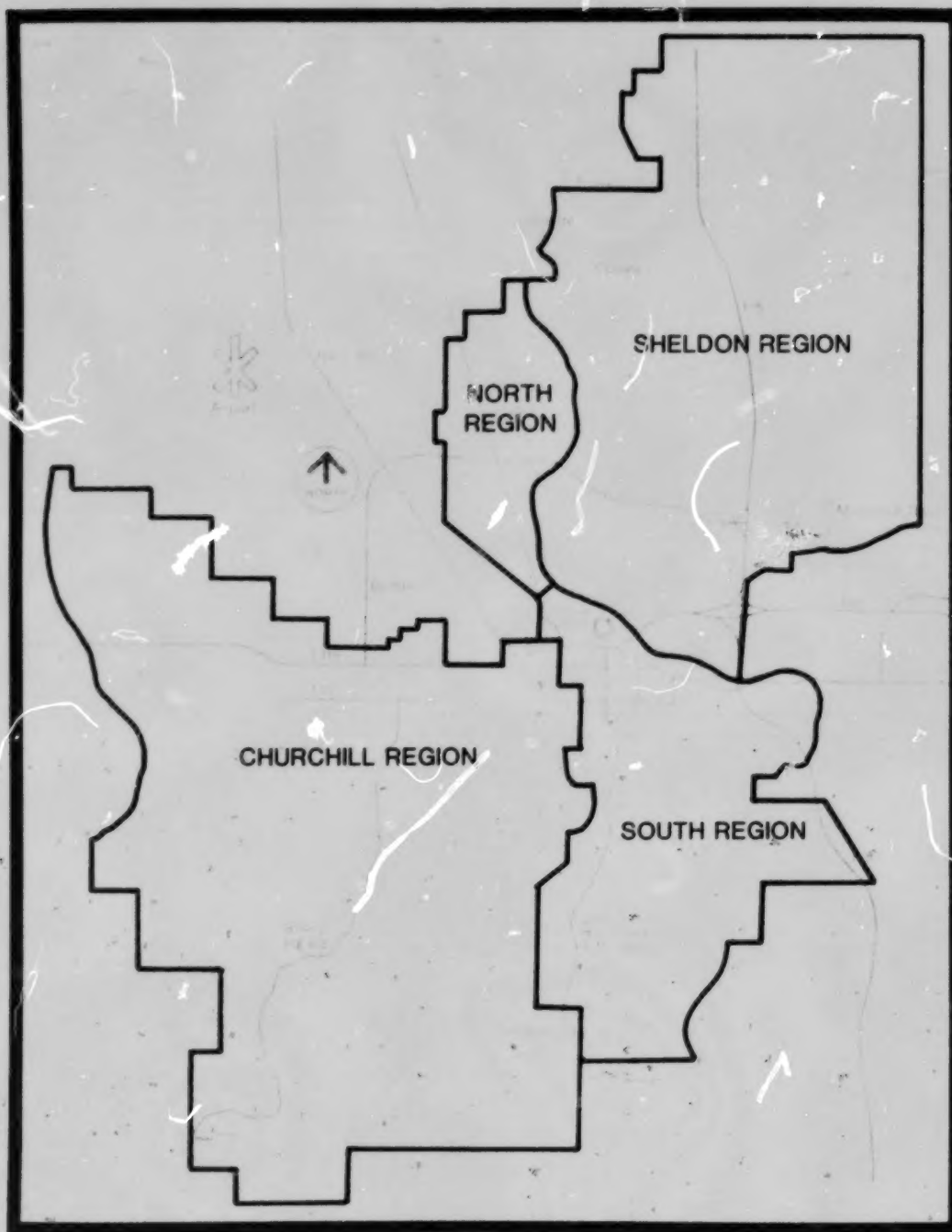
Eugene has diversified from the timber industry and become an important regional service center. The service industry is expected to grow at approximately 4% per annum into the early 1980's (State Employment Divisions). Nonetheless, a slowing of economic growth is expected because of the lumber and woods products industry and an expected slowing in the rate of growth in other industries, such as manufacturing, government, and trade. The effects of changes in the economy on population growth are discussed in greater detail in Chapter 2.

Of particular importance to District 4J is the location of future Lane County population growth. The above data suggest that growth will continue to be concentrated in incorporated areas and especially in the Eugene-Springfield metropolitan area. Nonetheless, the data do show that Springfield and two communities within commuting distance of Eugene, Veneta and Creswell are growing at a faster rate than Eugene. Many of these people may be employed in Eugene, but live in the satellite communities possibly

because of the cheaper housing and rural environment. The soaring prices and shortage of gasoline could possibly reverse the trend in the next couple of years. At the metropolitan level, variation in the location of population increases is affected by a number of factors which are discussed in considerable detail in Chapter 3. Of particular importance, however, is housing price and land use planning. As suggested earlier, the availability of moderately priced housing in Bethel and Springfield may account for the higher population growth rates there. But perhaps the most important variable affecting the location of current and existing population growth is the land use planning process. Land use planning is conducted by regional and local governments for jurisdictions whose boundaries are not coterminous with those of the school district. The school district is affected by a number of land use plans which occur at a number of different levels. The 1990 Eugene-Springfield Metropolitan Plan, for example, allocates land for residential use for the entire metropolitan area. What amounts to balanced allocations of residential land for the metropolitan area as a whole, may not amount to a balanced allocation for District 4J. It is for this reason that the school district has become actively involved in the land use process and has recognized land use planning as a tool for matching the location of school facilities with the demand for those facilities. The importance of land use planning and the land use plans affecting the district are discussed in Chapters 4 and 6.

School District 4J: Facilities

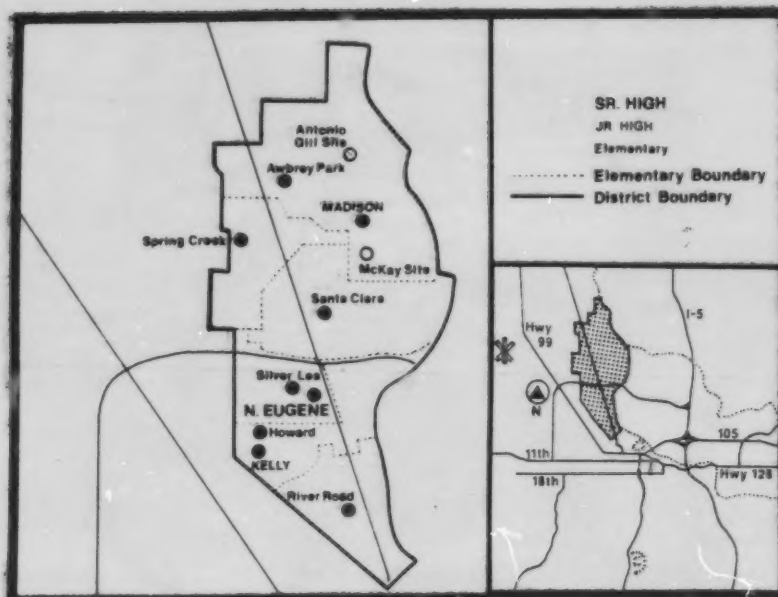
School District 4J is divided into four administrative regions according to high school attendance boundaries. These four regions, North, Sheldon, South, and Churchill, are frequently used to provide district-wide information. The descriptions regarding facilities and enrollments in this report will be addressed on a region-by-region comparison. The boundaries of these four regions is shown on Map 2.



Map 2 DISTRICT 4J SCHOOL REGIONS

North Region

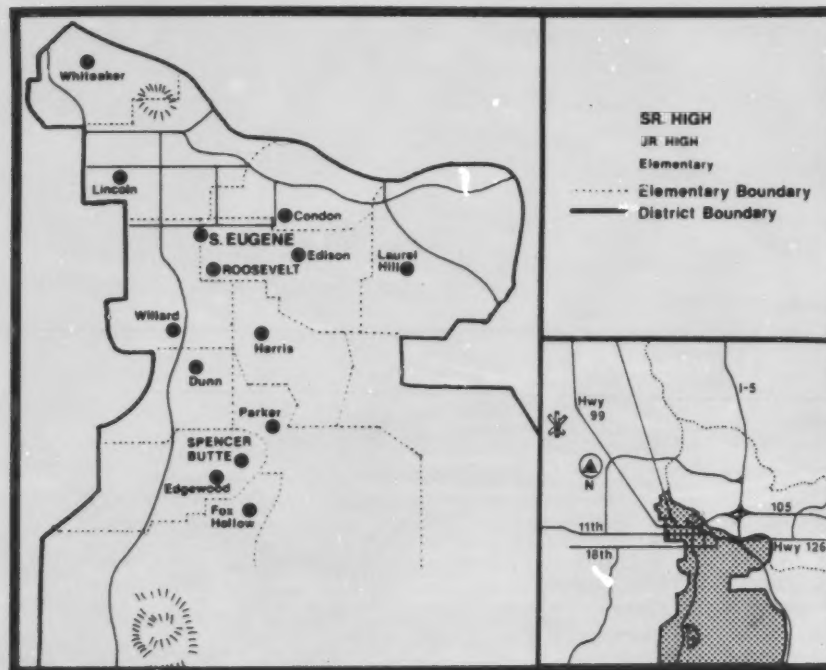
The North Region encompasses the River Road-Santa Clara area. There are six elementary schools, with a combined capacity to serve 3,122 students; two junior high schools with combined capacity to serve 1,498 students, and one senior high school with 1,229 program capacity. These schools and their attendance boundaries are shown in Map 3. The district also owns two undeveloped school sites in the North Region. Both of these sites are located in the most peripheral of the North Region's elementary school attendance areas, namely Awbrey Park. Both are 15-acre sites, large enough for either an elementary or junior high school.



MAP 3 NORTH REGION

South Region

The South Region encompasses the area immediately south of the Willamette River and lies south of the Sheldon Region. It extends east to include the Laurel Hill area and is bounded on the west by the Churchill Region. The South Region contains the downtown area, the University and environs and extends south beyond the South Hills. There are eleven elementary schools located in the South Region, with a combined capacity to serve 3,438 students; two junior high schools with combined capacity to serve 1,455 students and one senior high school to serve 1,377. These schools and their attendance areas are shown on Map 5. The district does not own any undeveloped sites in this region.

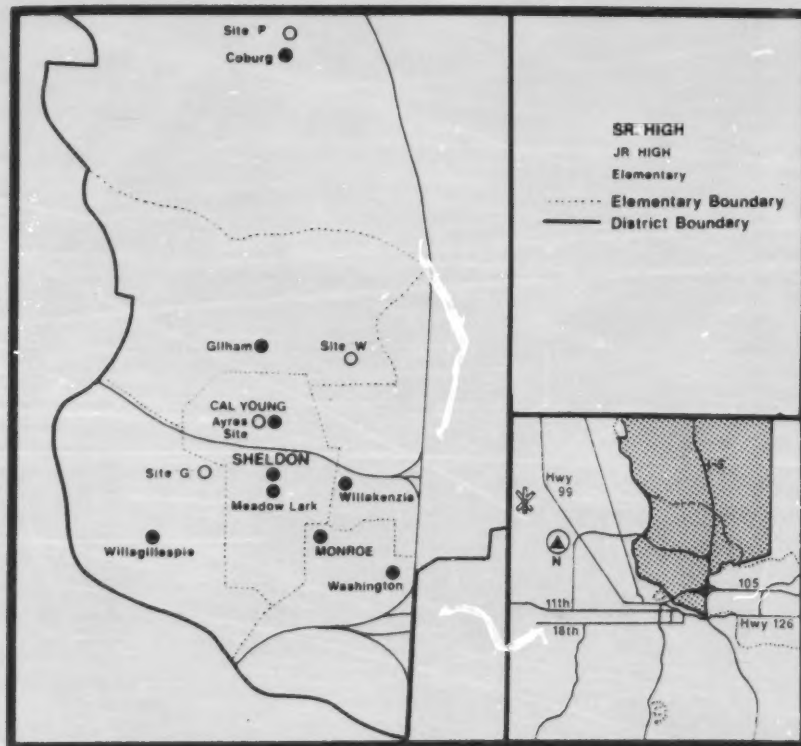


MAP 5 SOUTH REGION

Sheldon Region

The Sheldon Region, lying immediately to the east of the North Region, extends north from the Willamette River past Coburg. It is bounded on the east by the Springfield School District. There are six elementary schools, with a combined capacity to serve 2,458 students; two junior high schools with combined capacity to serve 1,073 students; and one senior high school with 1,243 program capacity. These schools and their attendance area boundaries are shown in Map 4.

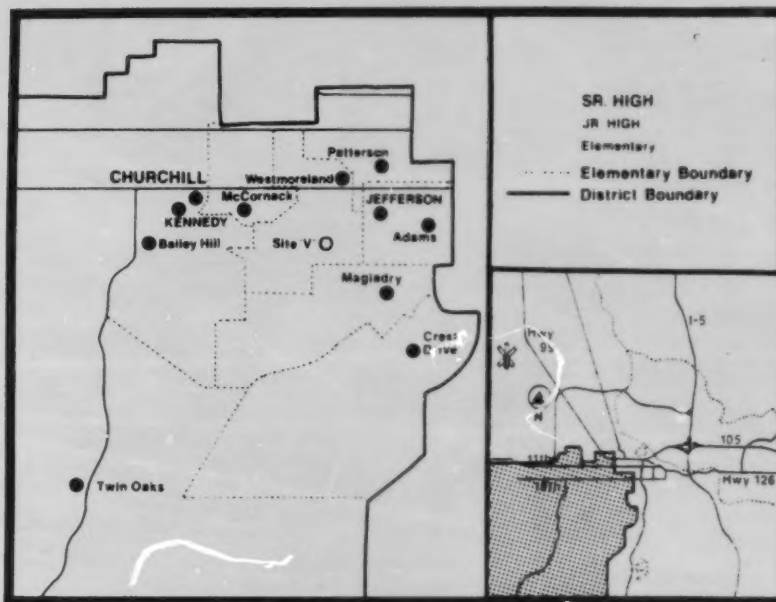
Also shown on Map 4 are the four school sites that the district owns in the Sheldon Region. The Ayres and Bond Lane sites are both 10-acre sites, and large enough for an elementary school capable of accomodating approximately 400 pupils. The district also owns two large sites, the 28-acre "Site P" near Coburg and the 37-site "Site W" to the east of Gilham Elementary School. Both sites are large enough for a high school, junior high school or elementary school. Combinations of junior high school and elementary school or high school and elementary school are feasible on each of these sites.



MAP 4 SHELTON REGION

Churchill Region

The Churchill Region encompasses the southwest area of Eugene. It extends from its boundary with the South Region west to Fern Ridge Reservoir. It is bounded on the north by Bethel School District and extends southwest beyond Lorane Highway. There are eight elementary schools, with a combined capacity to serve 2,923 students; two junior high schools, with combined capacity to serve 1,400 students; and one senior high school to serve 1,249. The school area is shown in Map 6.



MAP 6 CHURCHILL REGION

The district owns one school site in the Churchill area. "Site V" is located near the southwest periphery of the city of Eugene in the Westmoreland Elementary attendance area. This 10-acre site is appropriate for an average sized elementary school.

In sum, School District 4J operates 31 elementary schools (K-6 grade), 8 junior high schools (grades 7-9) and 4 senior high schools (grades 10-12) with the capability to serve a total of 22,465 students.

Enrollment: Patterns and Problems

School District 4J currently faces two separate but interrelated enrollment problems resulting from variations in enrollment patterns. It is experiencing declining enrollments on a district-wide basis while simultaneously faced with a mismatch between the location of students and the location of schools. The total number of students requiring school services has been dropping steadily since 1969. However, the declining enrollments have not been evenly distributed throughout the district. As older, central city neighborhoods "matured," the number of families with school age children decreased, which further aggravated the problem of declining enrollments in centrally located schools. These schools are operating substantially below their program capacities. Meanwhile, new residential developments, which attract young families, have been concentrated primarily in the suburban neighborhoods. As a result of this influx of school age children, the schools located in the newer neighborhoods at the periphery are generally more crowded, some operating in excess of their program capacity. Thus, the district must deal with the problem of declining enrollments, which is accompanied by financial strain due to loss of revenue, and with a "capacity dilemma" resulting from a disparity between the location of schools and of school space. The capacity problem of excess space in some and insufficient space in others is of particular concern in siting district facilities.

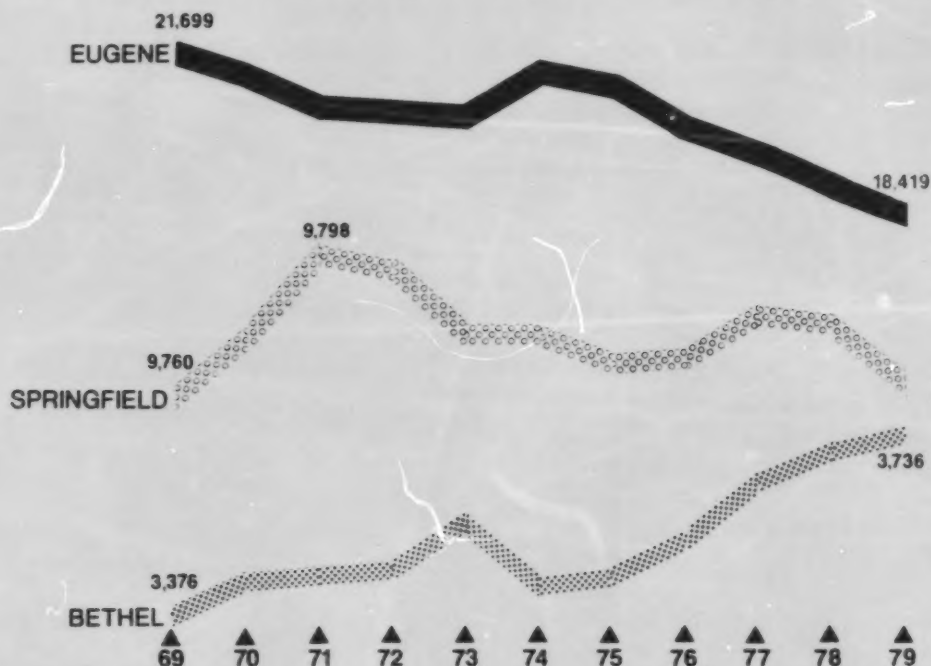


FIGURE 1 ENROLLMENT TRENDS IN EUGENE, BETHEL, AND SPRINGFIELD DISTRICTS

The other metropolitan school districts face different enrollment problems. Enrollments in the Bethel School District have been increasing rapidly because of the large amount of residential development that has taken place in the area. Enrollments in the Springfield School District have been increasing overall, but enrollments are declining in central schools, while schools near the periphery are crowded. Figure 1 shows historical enrollments in each of the three metropolitan districts.

Declining enrollment

School enrollments in School District 4J peaked in 1969 and have been steadily and dramatically dropping ever since. The district has experienced a steady decline in the number of students enrolled in grades one through six since 1969, and enrollments in kinergartens have been declining since their institution in 1974. This is readily apparent in Figure 2. By all indications, the overall decline will continue until the mid-1980's, when enrollments may begin to rise again slowly.

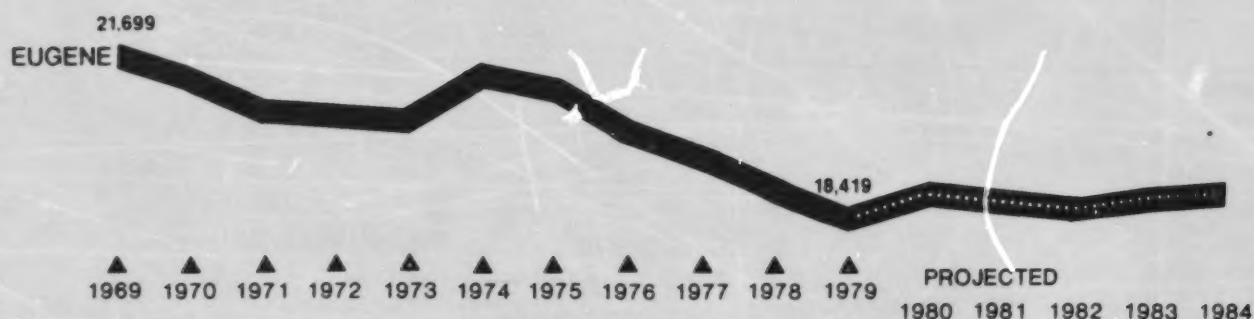


FIGURE 2 ENROLLMENT TRENDS IN SCHOOL DISTRICT 4J

The steadily dropping enrollments in School District 4J reflect a national trend toward declining enrollments in schools. In 1975, the National School Boards Association estimated that 36 percent of the nation's school districts had experienced declining enrollments. They predicted that between 1973 and 1982 total national K-12 enrollments would drop by almost five million students. The national decline in enrollments has been attributed primarily to a decreased birth rate, resulting from the increased female participation in the labor force, and a general propensity toward deferred child bearing and smaller family size. The relationship of these factors to the demand for school services is addressed in Chapter 3.

The effect of declining enrollments is felt most severely in the elementary schools. In addition to being the first level of the school system to feel the impact of decreased number of students, the elementary schools draw students from a smaller attendance area and are, therefore, more sensitive to changes in the composition of the population. Elementary schools located in neighborhoods in which there is a predominance of households with very young or very old heads of households experience a sustained decrease in enrollments.

The effect of declining enrollments and smaller classes in the elementary schools will be reflected in smaller secondary classes as these students age and move through the school system. The impact of declining enrollments has hit the junior high and high schools and will continue to do so for the next 4-6 years. Secondary school enrollments are, however, somewhat less sensitive to development pressures and land use decisions because they draw their student population from a larger attendance area. The variations between elementary school enrollments are "averaged out" to some degree as they are combined in junior high schools. Approximately 80% of the students enrolled in local elementary schools continue to local junior highs. The senior high schools experience fewer variations in their levels of enrollment due to drawing students from an even larger attendance area. Thus, we can see that while the problem of declining enrollments is currently of most concern at the elementary school level, it foreshadows the declining enrollments in secondary schools.

The small elementary classes moving through the school system mean that 4J's high schools will be reduced by at least 25 percent in the next four years. Between spring of 1977 and fall of 1977, enrollment dropped in senior highs by approximately 350 students. Charles Stephens estimates that from 1977 to 1982 senior high enrollments will drop by 1,202 students; junior highs will lose 177 more students and elementary schools are estimated to drop 181 students. (Five year projections for junior high schools within 4J have traditionally been very accurate due in part to the fact that these students are already enrolled and most will continue to the following year. Elementary enrollments are more difficult to project accurately because they are influenced by additional factors.)

The situation of declining enrollments presents numerous problems to the school district. Both the effects and contributing causes of this complex issue are discussed in Mazzarella and Barber's (1978) Facing Declining Enrollment: Considerations and Procedures. They state that some of the many issues affected by declining enrollments in Eugene include state aid, educational costs, teacher hiring and layoffs, community support of schools, equality of educational opportunity, possible school closures, the comprehensive high school, and even teacher inservice training. The list of contributing causes is equally lengthy: declining birth rate, population migration, dropout rates, nonpublic school programs, transportation patterns, employment opportunities, special education program changes, and land use and housing development in Eugene. Declining enrollment is a complex issue because many of the "causes" and "effects" may operate simultaneously. For example, land and housing development in Eugene both affects declining enrollment and may be affected by it; teacher layoffs and increased educational costs will affect school-community relations; a possible moratorium on teacher hiring will affect the type of inservice teacher training needed.

Why is declining enrollment district wide, or operating a school under capacity, a problem? As enrollment declines, cost per pupil increases. When enrollment drops by one student, the facility costs associated with that student do not immediately disappear. The cost of utilities, maintenance, teachers and administration are fixed. The National School Boards Association estimates that it takes three years or more before the loss of a modest number of students enables a district to cut costs.

While cost per pupil is increasing, the amount of aid calculated on a per pupil basis is decreasing. This includes state aid, federal aid, county funds, federal forest fees, and the state common school fund. The loss of students affects not only the number of students used to calculate the state's basic grant, it also affects the rate of the grant. The percentage of educational costs the state contributes to the district is based upon the wealth of the district. "Wealth" is calculated as the true cash value of district property divided by the number of students. Fewer students increase the "wealth" of the district in the eyes of the state and the percent of state aid is adjusted downward.

Districts are allowed to count 75 percent of students lost from the previous year for purposes of state aid. This recognizes that costs do not drop immediately when a student leaves; however, it does not allow sufficient time for districts to adjust themselves.

Capacity dilemma

Paradoxically, the district is confronted with a problem of insufficient school space during a period of declining enrollments. The "capacity dilemma" is basically a mismatch between the location of students and of schools. While the demand for school service is decreasing in centrally located schools, some schools at the periphery are forced to operate at or in excess of their program capacity.

The disparity in enrollments is primarily the result of varying fertility rates, residential settlement patterns and population migration patterns. The variations in enrollments are most severe in the elementary schools because they draw students from smaller surrounding areas and because new development characteristically generates more elementary age school children. Thus, the capacity dilemma is most acute in the district elementary schools located either in "mature" neighborhoods or areas experiencing residential development. Schools operating below capacity are located in the central and south portions of the city in older, established neighborhoods. The central city attendance areas (including Whiteaker, Lincoln, and Patterson) have been operating well below program capacity. According to the Lane County Housing Survey, only 21 percent of households in this area had children.

In contrast, in the areas where there is development (including Bailey Hill, McCornack, Westmoreland, Gilham, and Willagillespie attendance areas), 51 percent of all households had children living there. A survey of new housing conducted by 4J (Smit, 1979), indicates that families with children are attracted to the new housing constructed in suburban neighborhoods. Families moving into the area, or new families being formed within the area, tend to migrate to these peripheral neighborhoods. Thus, the bulk of enrollments is shifted to schools located on the periphery near development, while the problem of declining enrollments in central city schools is aggravated as their neighborhoods house fewer and fewer families.

Schools operating at or in excess of their program capacity are located in the west Churchill and Sheldon areas. The capacity dilemma presents the thorny problem of balancing enrollments within the district. The district must ensure equal educational opportunity for all students as well as maintaining economically sound management of facilities. The schools operating drastically below capacity have converted excess space to ancillary programs, while the schools operating in excess of capacity have less space for ancillary programs. The cost of operating a school does not decrease in proportion to the drop in student enrollments. Thus, operating schools below capacity is an expensive venture.

Given the fact that enrollments are declining district wide, and the fiscal conservatism facing the school board, it is unlikely that money will be available to construct new facilities or enlarge schools operating at excess program capacity. These factors, and many other issues, must be addressed in selecting the most appropriate solution to the "capacity dilemma." The range of alternatives and options which the school district can use to cope with the interrelated problems of declining enrollment and the capacity dilemma can be more appropriately addressed when the processes giving rise to the problem are understood. Chapter 6 contains a detailed discussion of these options.

District enrollments

The enrollment problems facing School District 4J have been discussed in broad terms. The following portion of this chapter describes the actual enrollment patterns throughout the district. This is presented as an overview, followed by a region-by-region description.

The variations in enrollments between centrally located schools and peripheral schools may even be understated by these enrollment figures due to the use of portable classrooms and the fact that students of alternative schools often live outside those attendance boundaries. The schools faced with the greatest enrollment pressures receive portable classrooms to accommodate additional students. The placement of portables increases the estimated program capacity of the school. Thus, while enrollments are increasing, the actual figures may show enrollments (as a percentage of program capacity) decreasing. Changes in program capacities, through the addition of portable classrooms, therefore, mask the trend of increased enrollments in the area.

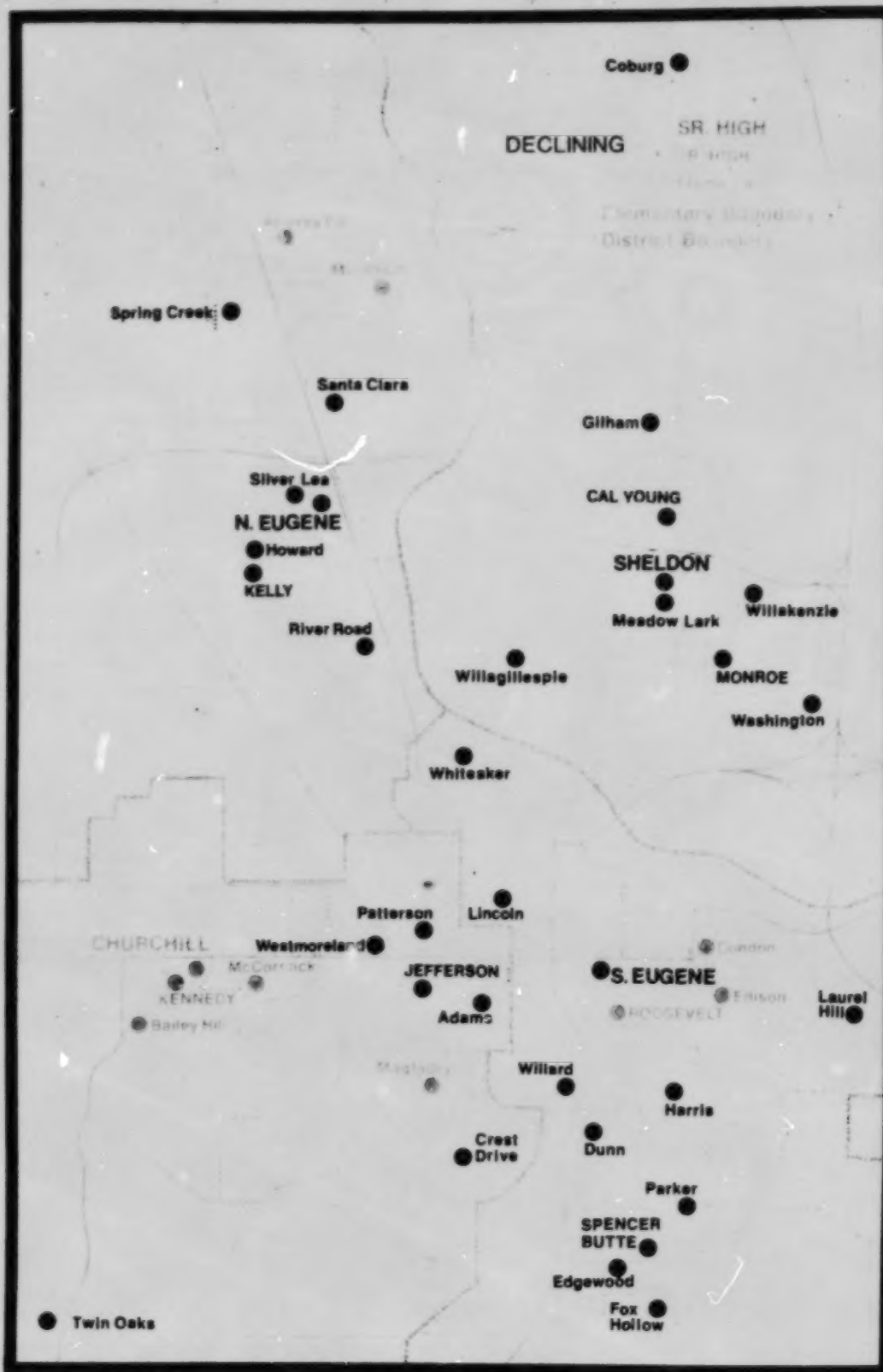
For example, considerable development in southwest and northeast Eugene has resulted in increased enrollments for Bailey Hill and Willagillespie Elementary Schools. As a result, eight new classrooms plus six portables have been added at Bailey Hill and five new classrooms built at Willagillespie. Program capacities for each school included these new classrooms. Thus, while the actual figures show Bailey Hill operating at 92% of capacity and Willagillespie at 78% of capacity, it is not the same problematic situation faced by the central city schools operating at similar low capacities.

Similarly, the extent of declining enrollments in central city schools is obscured by placing special magnet programs in those schools. Alternative schools located in Edison, Edgewood, Condon, Patterson, Lincoln, and Adams have boosted enrollments in these older, centrally located schools by attracting students from outside their attendance areas. An analysis of students attending alternative schools (conducted in 1978 by Research Specialist, Charles Stephens) reveals that 30 percent of these students live outside the attendance area.

L-COG recently analyzed enrollment trends for each elementary school attendance area to identify the schools which experienced declining enrollments. The individual school enrollment records were examined for the period 1970-1977. A regression analysis was completed for each school to determine linear trends in the enrollment level since 1970. Only ten of the district's 43 schools had not experienced a decline in enrollment (see Map 7). The six elementary schools not declining were: Awbrey Park, Bailey Hill, McCornack, Condon, Edison, and Magladry. Bailey Hill and adjacent McCornack schools located in southwest Eugene, both experienced increased enrollments. Awbrey Park, in North Santa Clara area, and Condon and Edison Schools, located near the University of Oregon, retained a relatively stable level of enrollments. All other elementary schools declined in enrollments. The elementary schools located in the River Road-Santa Clara area (Spring Creek, Santa Clara, River Road, Silver Lea, and Howard Elementary Schools), Coburg and Laurel Hill experienced the largest decline. Willakenzie School in the Sheldon Region and the Willard and Dunn Elementary Schools in the South Region also experienced substantially declining enrollments.

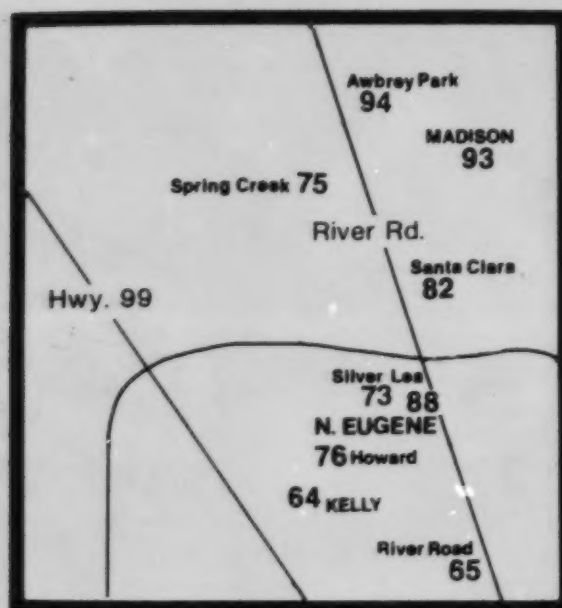
As previously noted, the situation of declining enrollments and the capacity dilemma is most acutely noticeable in the elementary schools. Variations in enrollments in the secondary schools tend to be "averaged out" due to the larger attendance area from which students are drawn. Only three of the junior high schools are operating at less than 70% capacity, Kelly, Spencer Butte and Jefferson Junior High Schools. Low enrollments in these schools can be attributed to the lack of new development within their attendance areas, low enrollments in the elementary schools which feed into them, and an overall neighborhood maturation effect (the students in the neighborhood age and progress through the various levels of the school system, and have not been "replaced" by another set of younger students). Kennedy Junior High School is at 104% program capacity in 1979-80. This peripherally located junior high is experiencing the repercussions of recent residential development in the west Churchill area.

The senior high schools show even less variation than the junior high schools. The only senior high school operating below 80% of its program capacity is Sheldon High School. Enrollments for the 1979-80 school year show Sheldon at 77% of capacity. However, much of the future residential development has been targeted for the Sheldon Region; thus, this low enrollment may increase as students enter the area and begin to fill the lower level schools. The relationship between the enrollments in elementary, junior, and senior high schools is discussed in the following section on a region-by-region basis.



MAP 7 LOCATION OF SCHOOLS WITH DECLINING ENROLLMENT

NORTH REGION

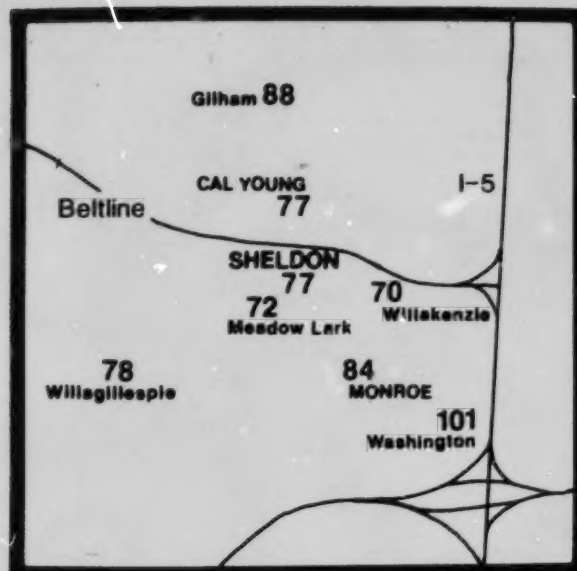


**MAP 8 PERCENT PROGRAM
CAPACITY**

North Region. Map 8 indicates how "full" the schools are in the North Region currently (1979-80 school year). Madison Junior High, located in the Santa Clara area, is projected to be at 91% of program capacity in the 1980-81 school year, a slight decline from the current situation. The low enrollments in Spring Creek (73%) and Santa Clara (79%) Elementary Schools may be somewhat offset by enrollments from Awbrey Park (94%). Kelly Junior High, located in the River Road area, is projected to be at only 61% of program capacity in the 1980-81 school year. The low projected enrollments for the elementary schools in the area, Silver Lea (72%), and Howard (74%), and the moratoria on development, indicate that low enrollments are likely to continue at Kelly Junior High School.

North Eugene High School is projected to be filled to 81% of its program capacity for 1980-81. This level of enrollments cannot be sustained if enrollments in the elementary schools in the River Road area do not increase. Low enrollments from Kelly Junior High School (61%) will soon result in smaller classes at North Eugene High School.

SHELDON REGION



**MAP 9 PERCENT PROGRAM
CAPACITY**

Sheldon Region Cal Young Junior High school, located in the northern half of Sheldon Region, has space available with a projected enrollment of 82% capacity. Students from Gilham (87%) and from anticipated residential development may boost enrollments at Cal Young. James Monroe Junior High, in the southeastern portion of Sheldon Region faces a similar situation. Enrollments for the 1979-80 school year are projected to be 80% of capacity. The influence of the low projected enrollments at Willakenzie (65%) and Meadowlark (72%) may be modified by students from Washington Elementary (102%) and residential development occurring in the recently annexed Willakenzie Island area. Enrollments at Sheldon High School are projected to be 70% for 1979-80. The current enrollments at Cal Young and James Monroe (Junior High schools) indicate that Sheldon is likely to maintain its current level of enrollments for the next few years. If the residential development proposed for this area actually materializes, enrollments in all schools in the Sheldon Region will increase.

SOUTH REGION

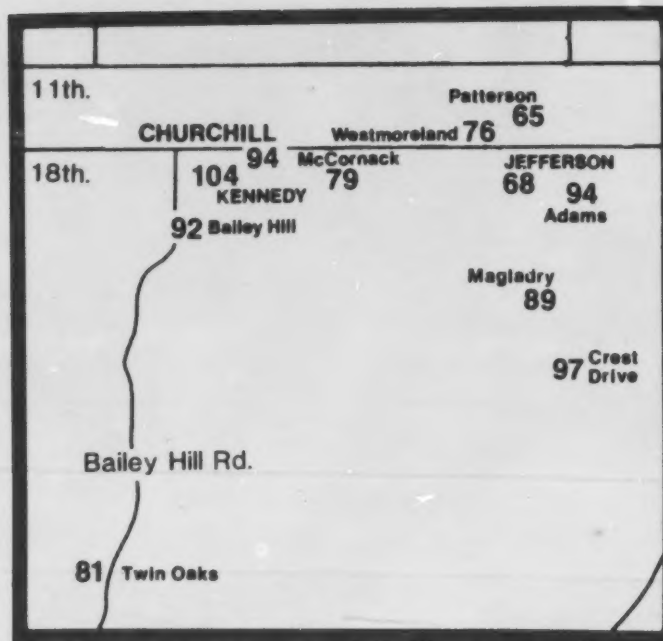


**MAP 10 PERCENT PROGRAM
CAPACITY**

South Region Map 10 shows how "full" each school is in the South Region currently (1979-80 school year). Roosevelt Junior High draws students from six elementary schools located in central and eastern Eugene. The unusually high enrollments projected at Edison (102%) and Condon (83%) will probably mitigate the effects of the low enrollment: from Willard (46%), Harris (81%), Whiteaker (70%), and Laurel Hill (59%). Spencer Butte Junior High School, which serves the South Hills area, is projected to be filled to only 62% of capacity in 1980-81. This reflects low enrollments at Dunn (51%) and Parker (50%) Elementary Schools. Enrollments at Edgewood (93%) and Fox Hollow (83%) raise the enrollments at Spencer Butte.

South Eugene High School is projected to be filled to 92% of its program capacity in the 1980-81 school year. The diverse nature of this region defies generalizations, but the wide attendance area contributes to the high level of enrollment.

CHURCHILL REGION



MAP 11 PERCENT PROGRAM CAPACITY

Churchill Region. The current (1979-80 school year) percent of capacity for each school in the Churchill Region appears on Map 11.

In the Churchill Region, Jefferson Junior High School, drawing its students from older central city neighborhoods, is projected to drop to be at only 65% of capacity in 1980-81. However, the elementary schools located near the periphery, Crest Drive (91%) and Magladry (80%) and the alternative program at Adams (94%), may offset the low enrollments anticipated from Patterson (64%) and Westmoreland (75%) Elementary Schools. Kennedy Junior High School, located at the western periphery of the metro area, is the only secondary school in the district operating over program capacity. Projected enrollments for Kennedy for 1980-81 school year are 101% of capacity. The addition of classrooms at Bailey Hill, high enrollments at Crest Drive (91%) and Twin Oaks (77%) and continued residential development contribute.

The enrollment projected for Churchill High School, 87% of program capacity for 1980-81, reflects the history of high enrollments at Bailey Hill, Crest Drive, and Twin Oaks Elementaries in previous years, and the 101% capacity experienced at Kennedy Junior High School.

CHAPTER III

THE DEMAND FOR SCHOOL SERVICES

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THE DEMAND FOR SCHOOL SERVICES

The magnitude and location of demand¹ for school services results from the complex interplay between many factors. The purpose of this chapter is to identify these factors and to describe theoretical work in many areas of the social sciences which is relevant to the understanding and prediction of the demand for school services.

The district level facility planner is concerned with two major components of demand for school services, namely the overall magnitude and the spatial location of this demand. The theories of social demography provide useful and adequate explanations of the first component, but are less useful when it comes to understanding and predicting the spatial location of demand within a school district. Explaining such spatial variations requires an understanding of the intra-urban dynamics which determine the location within the city of groups with varying family characteristics. The body of urban theory provides a useful framework for analyzing differences in enrollments from one part of an urban area to another. However, urban theory and the theories of social demography are closely interrelated and one purpose of this chapter is to show these connections.

If relevant, the theories should be able to explain why enrollments have continued to decline in District 4J in spite of the fact that population growth continues unabated. They should also be able to explain burgeoning enrollments in some schools and declining enrollment in others. Furthermore, these theories should enable us to predict the demand for school services and to speculate about potential problems the school district may face.

The chapter describes the socio-demographic theory that is relevant to predicting the demand for school services at a district-wide level. The nature of the relationship between population growth and school enrollments is discussed. The major determinants of population growth in District 4J are examined and their potential impact on school enrollments is explored. Chapter 4 deals with the intra-district distribution of demand for school services. Urban theory dealing with the location of population groups with distinctive socio-economic and life-cycle characteristics is used to explain differences in enrollment trends within the district in very general terms. Enrollment variation at a more micro-level is explained in terms of the theories of neighborhood development and change.

¹By "demand" we mean the number of children for whom school services must be provided.

Population Size and the Demand for School Services

The relationship between population size and demand for school services is not as clear cut as it might appear. The popular notion is that the bigger the population, the greater the demand for school facilities. The experience of recent decades has shown that however intuitively appealing such a relationship may be, it does not fit the facts. Over the past two decades the population of the United States has grown at a rate of between 2% and 3% annually. The Office of Technology Assessment of the U.S. Congress estimated that over the same time period there has been a 10% decline in elementary school enrollments nationwide. The experience in Eugene Public School District 4J has been even more dramatic. From 1950-70 the City of Eugene experienced an annual growth rate of almost 5%. In the last 8 years, however, it has dropped to just under 4% annually. This meant an increase of 46,000 persons since 1960. However, enrollments in local elementary schools have continued to decline steadily since the mid 1960's (a 9% decline since 1968). These figures show clearly that population growth does not necessarily mean increasing enrollments in schools. What they do not show, however, is the extent to which enrollments would have declined if population had not grown. It is probable that population increases have mitigated the effects of declining enrollment. Furthermore, considerable variation in the impact of population growth on enrollments from one jurisdiction to another can be expected. Even if two jurisdictions have identical increases in population, the impacts on local enrollments may differ. This variation may be attributed largely to variations in the three major components of population change:

1. Births
2. Deaths
3. Migration

Population growth caused by a decrease in the death rate, for example, is unlikely to have any major effects on school enrollments unless this decrease is related to a reduction of infant mortality. The impacts on enrollment of population growth caused by migration will depend upon the family characteristics of the migrants. If, for example, these migrants are mainly retired folk, as is the case in Florida, then the impact on enrollments is likely to be small. It is in the dramatic decrease in births that the most compelling explanation of enrollment decline is to be found, especially at the national level.

Births

Births are the most important of the three components of population change in explaining enrollment decline. The following (1977) statements from the Office of Technology Assessment of the U.S. Congress are testimony of the importance of births:

"For the past 18 years there has been a steady decline in birth rates so that about 28% fewer children are being born now (3.1 million) compared to then (4.3 million)....This decline has resulted in a 10 percent decline in elementary school enrollments with a further 7 or 8 percent certain by the middle of the 1980's."

The total number of births in any given year depends on the number of women in child bearing years and their fertility. While the total number of women of childbearing ages can be accurately predicted, estimating fertility rates is considerably more difficult.

The Number of Women of Reproductive Age

The number of women in the childbearing cohort depends on birth rates 16 to 44 years ago. If birth rates then were high, then the number of women currently of reproductive age will be large. Births in the U.S. between 1951 and 1962 were higher than ever before or since, with the highest number of births being recorded in 1957. This period is commonly known among demographics as the "baby boom" which was particularly evident in the decade subsequent to end of World War II. The women born at this time are currently of reproductive age. At no other time in the history of the U.S. has the number of women in this age range been so large, than is true today. Demographers have for some time predicted a second "baby boom" when the "baby-boom" women start having children of their own. Yet this boom in births has not materialized and enrollments continue to decline. Clearly, this calls into question again the relationship between population size and births. Yet there is reason to speculate that the average number of women currently of reproductive age will be a significant factor in the next decade. The basis for this speculation is more appropriately handled after the significance of fertility rates has been discussed.

Fertility Rates

By far the most convincing explanation of enrollment decline is to be found in the changes in the fertility rate of women of reproductive age. The term "fertility rate" refers to the average number of births per woman of reproductive age for a specific time period. Since 1962 the fertility rate has declined markedly. In 1967 average births per 1000 wives (18-39) was 2.43. By 1976 this figure had declined to 1.92. Average births expected per 1000 wives (18-39) has declined from 3.1 in 1967 to 2.4 in 1976.

The theories advanced to explain declining fertility rates are legion. The decline has been attributed to increased female participation in the labor force, changing role expectations of women, postponement of marriage, deferred child bearing, smaller family sizes, urbanization, and higher levels of income and education. Perhaps the most comprehensive of the theories is the theory of "deferred child bearing", which incorporates a

variety of other influences. This theory posits that women are putting off having children until later in life. This decision to delay child bearing is due largely to increased participation by women in the labor force. The contemporary woman, the theory postulates, is looking for a balance between careerism and familism. In setting up a career many women have chosen not to take on the added responsibility of children early in life. Byrne (1979) reports that almost 70% of American women now hold jobs between the ages of 20 and 24. Whereas in 1960 women accounted for 32.3% of the labor force, by 1978 this figure had risen to 42%.

The preparation and involvement by women in careerism is reflected by later marriages, longer years of education or preparation, increasing divorce rates and increasing non-familial interest being pursued by women.

Another explanation of deferred child bearing is that in the early stages of marriage, young households prefer to set themselves up materially before having children. In order to make housing payments, for example, young married couples may not be able to afford children early in their marriage. Spiralling increases in the price of housing means that young wives may be forced to work to maintain a given standard of living. As the husbands earning power increases through time, it becomes possible for wives to have children. The overall effect, is to defer child bearing until such time as it is financially feasible.

In spite of continuing decline in birth rates, women of reproductive age continue to give their "stated birth expectations" (CPR, 6/75) as slightly above two births on the average. Deferred child bearing has continued for longer than expected. Many of the women who are products of the early stages of the baby boom are, however, currently in their late twenties. If they are to fulfill their stated child bearing expectations, they cannot postpone much longer. This has led many demographers to speculate about the possibility of a second baby boom. There is evidence that fertility rates are increasing in Lane County and it is very likely that birth rates may increase substantially in the near future. Even if birth rates were to decrease it is probable that there will be an increase in births through the 1980's. This is simply because of the large number of "baby-boom" women who will reach the age where the decision on child bearing cannot be postponed any further. Many may decide not to have children at all. However, demographers are predicting an upswing in fertility rates and births for the 1980's. This means that the impact of increasing fertility will be felt as increased enrollments in the schools by the latter part of the 1980's and the early 1990's. Up until then, continued decline in enrollments is likely. For Lane County, an updated projection computed by Lane Council of Governments Research section suggests the following:

1. The "baby boom," caused by high fertility rates of Oregon during the 1951-1962 period resulted in age cohort 10-14 having the highest resident population count in 1970 in Lane County.

2. In 1975, the 15-19 cohort shows the highest resident population, reflecting the baby boom bulge as it ages through time. There are also high numbers of people in the 20-24 age group. The 15-29 cohort shows a fertility rate of 48.6 per 1,000 women; the 20-24 cohort, 115.7 per 1,000 women.
3. From 1980-1990, the distinction in fertility rates between cohorts 20-24 and 25-29 is expected to blur, resulting in women aged 20-29 having a very high fertility rate when combined. This occurrence will depend in part upon continued deferral of marriage and childbearing by the 20-24 cohort to the 25-29 age period.

Also implied is that baby boom women will bear more children, even if individual fertility rates remain low. In other words, women exhibiting age differences of up to ten years are expected to bear more children during a ten-year time span. The consequences of this pattern will be an increase in school-age children by the year 2000. Fertility rate measurements for Lane County are shown below.

Table 1
Age Specific Fertility Rates
for Lane County (Per 1,000 Women)

<u>Cohort</u>	<u>1970</u>	<u>1975</u>	<u>1980</u>	<u>1985</u>	<u>1990</u>	<u>1995</u>
15-19	56.3	48.6	50.1	47.3	46.1	46.1
20-24	154.6	115.7*	133.8	140.2	143.0	144.4
25-29	131.0	105.3	126.7	136.9	142.4	144.8
30-34	53.9	40.3	46.6	50.3	52.4	52.6
35-39	19.7	13.5	14.0	14.2	14.2	14.3
40-44	4.9	3.2	3.3	3.2	3.2	3.3

*includes earliest portion of "baby boom" women

SOURCE: Lane Council of Governments Research, June 30, 1977.

From another angle, births in Lane County have averaged 3,500 per year from 1970 to 1975. LCOG predicts over 20,000 births between 1980 and 1985, and approximately 25,000 births between 1990 and 1995. These projections again reflect the impact of the baby boom population bulge, as well as immigration of women in the highest fertility rate categories. Here, an assumption of continued low fertility and deferred childbearing patterns are taken into account.

Migration

Shifts in population from one locale to another can have a profound effect on enrollments in a local school district. It is with these shifts and their impacts on enrollment that we are concerned here.

At the national level two major shifts of population appear to be taking place. First there is a major shift in population from the Northeast and Northcentral regions back to the "sun belt" in the South. Second, the shift from all other parts of the country to the West Coast is continuing. Within the West Coast region significant shifts of population from the Southwest to Northwest are occurring. It is this latter shift that is most significant for District 4J. The shift is manifested at the local level by a large influx of migrants. Oregon's rate of in-migration is one-and-a-half times the average for all states. More than three-fourths of Oregon's in-migrants come from neighboring Western states; one-half of those from California and Washington alone. A recent (1978) survey of new housing occupants conducted by the school district reveals that 44% of out-of-state in-migrants living in new housing come from California, seven times as many people than from any other state.

In Lane County the impacts of in-migration on population change are dramatic. From 1960 to 1970 population increased by 31%, well above the Oregon average of 18.2%. Two factors are considered in this change; a natural increase of 15.6% and a net migration (defined as change in population due to the movement of people from one location to another) of 15.4%. While much of the move to the Northwest and Oregon is probably related to "images of the good life", the concentration of these migrants in various parts within Oregon correlates strongly with employment opportunity. Employment throughout Oregon has been rising steadily since 1970. This growth is expected to continue. Total employment for Lane County will rise from 900,000 jobs presently to almost 1,500,000 by 2000. Nonetheless economists are predicting a slowing of the rate of economic growth. The trade and services industries are currently playing a strong role in this economic growth. Eugene has become an important center for services of all kinds throughout the Southern Oregon area. Lane County's growth is a reflection of this as the two are closely tied together economically. Service sector growth will also diversify the area's economy which had been heavily dominated by the timber and wood products industry. The continued decline of this sector is a product of several factors, decreased supply and increased cost of saw timber; increased labor costs and counter-productive taxing policies.

Unfortunately, no data is available which explores the relationship between work types and the number of children generated. The effect on 4J of this shift in economies, therefore, will probably remain unknown. It is clear, though, that continued economic growth will generate increased population growth, primarily in the form of in-migration. For Oregon, in-migration is expected to account for the largest share of population rise in this area for the next 30 years.

As pointed out earlier, an increase in population through migration does not necessarily mean an increase in enrollments. Much will depend upon the family characteristics and fertility rates of migrants. Sustained migration from outside of District 4J has the potential to change the nature of a community and, significantly, its educational needs. While data on migration is hard to come by, it appears that many of the in-migrants to Lane County exhibit characteristics which suggest that they may have a large impact on enrollments. Analysis of the 1970 census statistics in the document, Migration and Oregon, provides a sketch of the generalized characteristics of migrants. Migrants are younger, have more children, seem to prefer rental units, display more extensive educational preparation, are disproportionately represented in the highest status occupations and, within age groups, receive more income (Holden 1974)².

With respect to school districts, the most pertinent characteristic of migrants is their family structure - the number of children in the family. As indicated earlier, migrants in Oregon tend to be younger, and have more children than resident Oregonians. Whether migrants do in fact have fewer children on average in Lane County is, however, uncertain. Evidence from the Lane County Housing Survey suggests that the family characteristics of in-migrants are very similar to those of the resident population, but that in-migrants have slightly fewer children. The school district survey of new housing provides similar findings, but in-migrants are found to have more children per household than local residents. One reason for these differences is that the Lane County survey includes the student population while the survey of new housing is concerned largely with the occupants of new single family housing, few of which are students. From the perspective of District 4J, the ability to distinguish the neighborhoods in which the migrants with children choose to live is the key to mitigating their effect on the district.

Neighborhood preferences of migrants

Are any areas of the district more affected by in-migration? An analysis of Lane County Housing Survey data indicates the student influence in Laurel Hill and the central city is realized in a higher percentage of in-migrants in the population. The attendance areas with development pressures and capacity problems also show a relatively high number of in-migrants. Data from the Lane County Housing Survey indicates a correlation between in-migration and residential development. Churchill Region, for example, is divisible into two sub-regions: one, near the urban perimeter, has had a considerable amount of recent building; the other, between the urban center and the periphery, has had relatively less development. In-migration to the two sub-regions is quite different. Over 44% of the present population in the first sub-region lived outside of Lane County in 1973. Only about 25% of the more central sub-region's population did.

²Holden, A.G. and W.B. Shepherd. Migration and Oregon. Oregon State University, Corvallis, May 1974.

Migrants come to Eugene regardless of the availability of housing. They may, however, find themselves attracted to new housing because of low vacancy rates and other factors. There is evidence substantiating the idea that migrants do live in new housing. Comparison of the percentage of people moving 1965-1970 and 1970-1975 for various neighborhoods shows that the Willagillespie attendance area had substantially less in-migration than the Eugene average for the period 1965-1970. There was also little residential development during this period. As new housing was built in Willagillespie, the percentage of residents who are in-migrants increased, indicated in the 1970-1975 data. In the center city area with virtually no residential building, the percentage of residents who are in-migrants has only risen slightly. Repetition of this pattern would mean an increase in in-migration in attendance areas such as Gilham and Crest Drive as vacant land develops. Moreover, because the data show that the majority of in-migrants associated with the University of Oregon do not have children, the implications of in-migration may be most significant in the areas where new housing is being built. If the correlation between residential development and the large number of in-migrants is causal or effective, then monitoring new development will be a way of identifying and accommodating new students.

The 1978 school district survey of new housing indicates that half of the inhabitants of new housing come from outside of School District 4J. Of the in-migrants, 40% come from outside the state of Oregon, 24% come from other parts of the state, 12% from within Lane County, and the remaining 24% come from other parts of the metropolitan area. The average number of children per out-of-state household is 1.4, which is above the district new housing average of 1.0. This suggests that if in-migration from out-of-state continues to increase, increases in district-wide enrollments may be forthcoming. Income characteristics of out-of-state migrants approximate closely those of the population of new residents as a whole.

If because of low vacancy rates in-migrants are attracted to new housing, then out-of-state in-school services within the district. Most new housing is built in peripheral areas. The burgeoning enrollment in many peripheral Eugene schools then, is explained in part by the high incidence of in-migrants (who have more children than average) among new housing occupants.

CHAPTER IV
THE INTRA-DISTRICT
DISTRIBUTION OF
DEMAND FOR SCHOOL
SERVICES

CHAPTER IV

THE INTRA-DISTRICT DISTRIBUTION OF DEMAND FOR SCHOOL SERVICES

The purpose of this section is to introduce theories which have relevance in explaining the spatial distribution of enrollments within District 4J. Empirical evidence establishing the relevance of these theories in Eugene is cited where appropriate. The dynamics that underlie the location of children within a school district have important policy implications. At some time in the not too distant future, District 4J may have to decide to build new schools in some areas and close schools in others. This section, in conjunction with the previous one, provides the theoretical foundations upon which decisions may have to be based. The section is organized into two main parts. In the first part we draw from a number of theories of intra-urban spatial structure in an attempt to explain the existing distribution of enrollments in the district in very general terms. The urban portions of District 4J are described and characterized in terms of selected socio-economic variables. In the second part we focus the analysis by discussing the relevance of theories of neighborhood change to variations in enrollment.

The Theory

More than 90% of the children who attend schools in District 4J, live within the boundaries of the City of Eugene. By treating District 4J as a largely urban school district, we can draw on the intra-urban spatial structure theories to explain the location of the demand for school services within the district.

Urban theorists have identified three major socio-economic characteristics of urban populations that are arranged in systematic and quite distinctive patterns within cities. These three characteristics are:

1. Stage-In-The-Life-Cycle
2. Income
3. Ethnicity or Race

Each of these characteristics have implications for the distribution of enrollments within an urban area. Because of the ethnic homogeneity of Eugene Public School District 4J, we will not deal specifically with the ethnicity characteristic here. Socio-economic status and stage-in-the-life-cycle on the other hand, are discussed in detail.

Stage-in-the-Life-Cycle

Life-cycle theories are based on the premise that as individuals age, their way of life will exhibit predictable characteristics. The traditional life-cycle theories assume that familism is the dominant life style. Familism is defined by a total emphasis on child-rearing so that the whole way of life is focused on children. A number of stages have been identified in this lifestyle. Foote, et al (1960), suggests that pre-child, child bearing, child rearing, child launching, post-child, and widowhood are stages that typify the familism life style. Closely associated with stage-in-the-life-cycle is the demand for certain types of housing. In the early and late stages of the cycle, households will require less space because of the absence of children. Consequently, they will tend to occupy smaller dwelling units such as apartments or multi-plex units. Households with children at home will require considerably more space and will want a larger dwelling unit. The household type that has most typically satisfied demands for additional space associated with child bearing is the single family detached home. In Eugene, a survey of new housing indicated that 26.1% of respondents moved to their detached single family home because of a need for more living space. Furthermore, a significant relationship was found to exist between the amount of space in a unit (as measured by number of bedrooms) and the number of children. A Lane County survey of housing (1979) in the entire Eugene-Springfield metropolitan area provides supporting evidence. Table 2 shows the average number of children per dwelling unit with number varying from zero through five. Data from both surveys are included.

Table 2
The Relationship Between Space and Number
Of Children Per Unit

Number of Bedrooms Per Dwelling Unit	Average Number of Children Per Unit	
	School District Survey	Lane County Survey
1	.14	.03
2	.16	.33
3	1.20	.72
4	2.10	1.23
5	2.50	1.29

The size of the dwelling structure is of course not the only component of the space requirements of people with children. A yard for children to play in is one of the reasons why the detached single family unit has dominated the family housing market. In Eugene this dominance is very evident. The School District survey found that new single family homes produce an average 1.32 children per unit. New multi-family homes on the other hand produce only 0.27 children per unit. The Lane County Housing Survey produced similar results which are summarized in Table 3.

Table 3
Number of Children Per Unit By Structure Type
In Eugene, Lane County Survey of Housing

Structure Type	Number of Children Per Unit	
	School District Survey (New Housing)	Lane County Survey
Single Family	1.32	.75
Duplex	--	.53
Mobile Home	--	.21
Multi-Family	.27	.14

It is well known that housing is arranged in homogenous concentrations within urban areas. Single-family units are generally found at some considerable distance from the center of the city. Higher density multi-family units are usually found near the center. Economic theory of city structure (Mills 1972) is useful in explaining why this is the case. Economists have noted for some time that because of accessibility to central employment and amenities, residential land close to the center is more expensive than land further out. Because land is expensive near the urban core, land owners will exchange capital for land. Thus, land owners have an incentive to use land more intensively near the urban center. This explains why most high rise apartment buildings are found in central areas. In contrast, single family detached homes use large amounts of land and, consequently, it is not surprising that they are found nearer the periphery where land is less expensive. This also means that more children will be found nearer the edge of the city. In very general terms, then, life cycle theory in conjunction with economic land value theory, provide an explanation of the intra-urban distribution of enrollments in District 4J. Enrollments in peripheral areas should be higher than those in central areas.

When we consider the influence of urban growth on land values within the city, some interesting implications for school enrollments emerge. Basic economic theory postulates that urban growth increases the demand for land concomitant with increases in the value of land. This means that in neighborhoods nearer the center, landowners have an incentive to convert the land from single family use to higher density uses. Land at the fringe is brought into use to meet the demand for single family housing. This classic model yields declining enrollments in central areas where single family homes are being converted to higher uses, and increasing enrollments at the periphery.

A very good indicator of the relevance of life cycle theory in Eugene is the distribution of certain age groups within the city. Areas of the city which have disproportionately large numbers of people in the age range 25-49 should also have more children than other areas. This age range corresponds approximately with the child bearing, child rearing, and child launching stages proposed by Foote. Areas with large numbers of people in the lower segment of this range (24-35) should have more young children at home. The school district survey of new housing provides evidence that stage-in-the-life-cycle is in fact relevant in explaining the distribution of children within the district. The survey shows that new residential neighborhoods produce twice as many children per household than the city average. Not surprisingly, the proportion of people in the fertile age range for these new neighborhoods is high. As many as 68% of the respondents are in the age range 19-39 as compared to 35%* for the metropolitan area as a whole (per LCOG 1980 estimates). Furthermore, the survey shows that dwelling type and stage-in-the-life-cycle are related. As many as 76% of the respondents living in single family homes fall in the fertile age range 25-49. The comparable figure for multi-family housing is 33%. In accordance with expectations, 49% of apartment dwellers are under the age of 24 and 17% are above 60. Only 5% of the occupants of single family dwellings are in the above 60 category.

Income

Urban theorists have shown considerable interest in the spatial arrangement of income in cities. If the income and child bearing characteristics of population groups are related, then an understanding of the location of these groups is relevant to our understanding of the intra-district distribution of enrollments. In this section we first consider the theories of urban socio-economic structure and their relevance in the Eugene-Springfield metropolitan area, and then examine their implications for explaining and predicting differences in enrollments in various parts of the district.

*People under 19 are not considered in computing this statistic to make this data comparable with that of the survey of new housing.

Perhaps the best known descriptive models of the spatial organization of income groups in cities are those developed by the Chicago School of Sociologists. First, the concentric zone model, proposed by Burgess in 1925, suggests that the zone of low income housing is located near the central business district, the high income zone at the periphery, and the middle income zone between the two (see Figure 3). As a big city grows, each zone expands by invading and occupying the zone adjacent to it. This is the well-known concepts of "sequent occupance" of neighborhoods by various income groups.



FIGURE 3 CONCENTRIC ZONE MODEL

The second of the classic theories is Hoyt's (1939) sector theory. He suggested that instead of concentric zones, different socio-economic groups are arranged in radial sectors emanating from the center (see Figure 4). In most cities industrial activity is usually located along a major transportation facility of some kind (railroad, water) so that it exhibits a linear rather than a clustered spatial form. Lower income people settle on both sides of industrial sector. Note that in this arrangement low income housing extends from the center of the city to the periphery. Finally, a furthest distance from both industry and low income housing is the high income sector. Near the center, this sector would be comprised of luxury apartments and penthouses. At the periphery, country mansions would prevail.

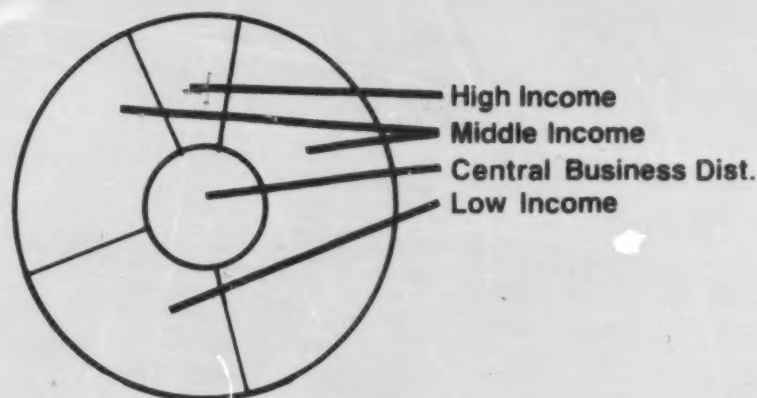
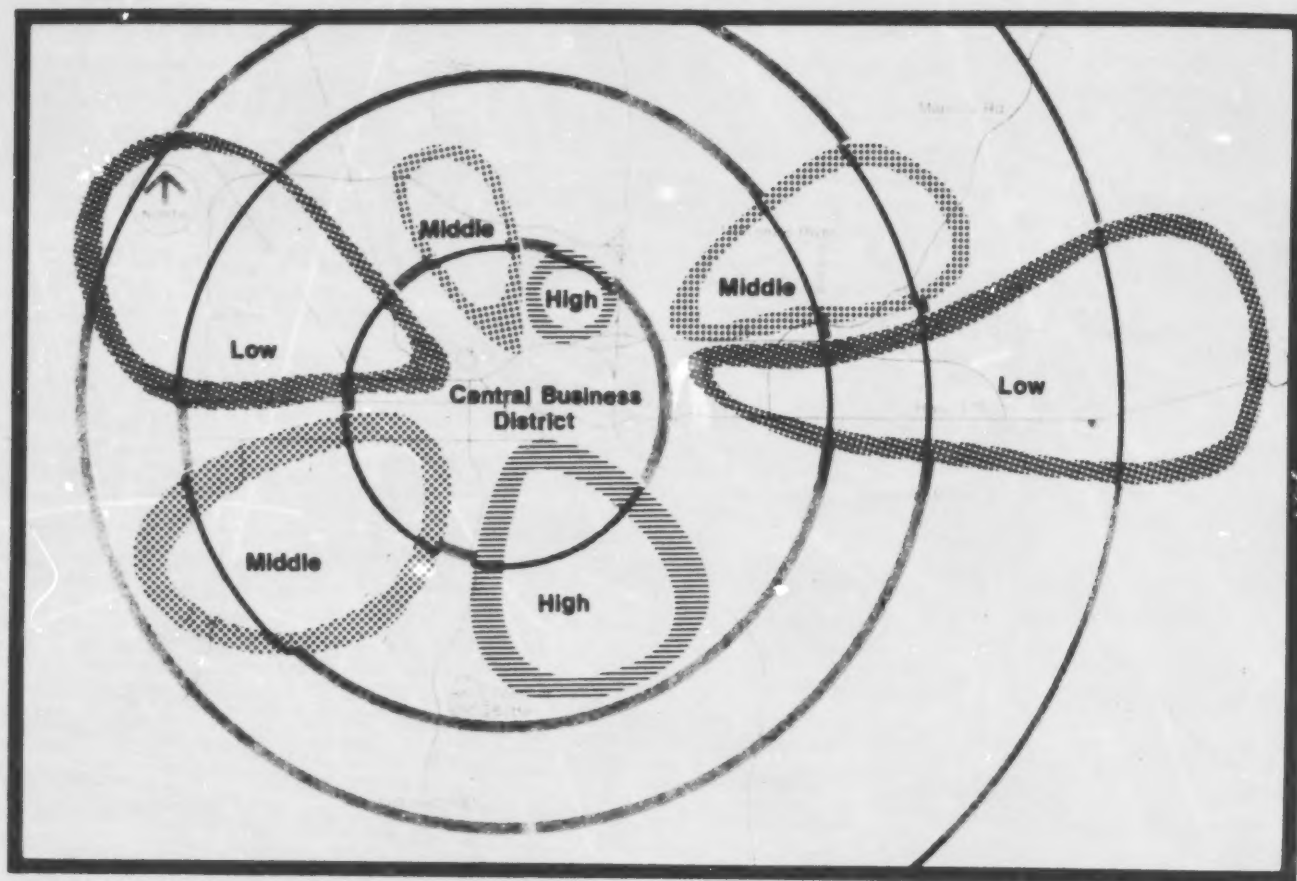


FIGURE 4 SECTOR MODEL

In Eugene-Springfield, neither model exemplifies existing urban patterns. In fact, the spatial distribution of incomes exhibits both concentric and sectoral organization. This means that not only does income differ between central and peripheral areas, but also between various sectoral subareas of the city (see Figure 5).

FIGURE 5



THE SPATIAL DISTRIBUTION OF INCOMES IN EUGENE-SPRINGFIELD

(based on income data from the Lane Co. Survey of Housing (1978-79))

Evidence from the 1978-79 Lane County Survey of Housing suggests that income differences are more marked between central and peripheral areas, than between sectors. Income differences between central and peripheral areas are closely associated with stage-in-the-life-cycle. In the previous section we showed that central areas have disproportionately large numbers of people in the pre-child stage of the life cycle. These people are also in the early stages of their careers and, consequently, their incomes are lower. Furthermore, many of the inhabitants of central areas are students.

While income differences between sectors are not as marked as between zones in Eugene, these more subtle differences are nonetheless very important in explaining differences in enrollments in the metropolitan area. As described in a preceeding chapter, enrollments in both the Bethel and Springfield School Districts have increased overall in recent years, while enrollments in District 4J have declined. Before proceeding, we need to examine the nature of the relationship between income and enrollments. Traditionally, lower incomes has meant more children and it is generally accepted that lower housing income projects produce more children than their higher income counterparts. Evidence from both the school district Survey of New Housing and the Lane County Housing Survey, indicates that the number of children actually increases with income in Eugene. However, simple cross-tabulation of income and number of children fails to take into account life cycle effects. We do not expect many children in central areas because most of the inhabitants are either very young or very old. Many of these people also have low incomes, or are university students.

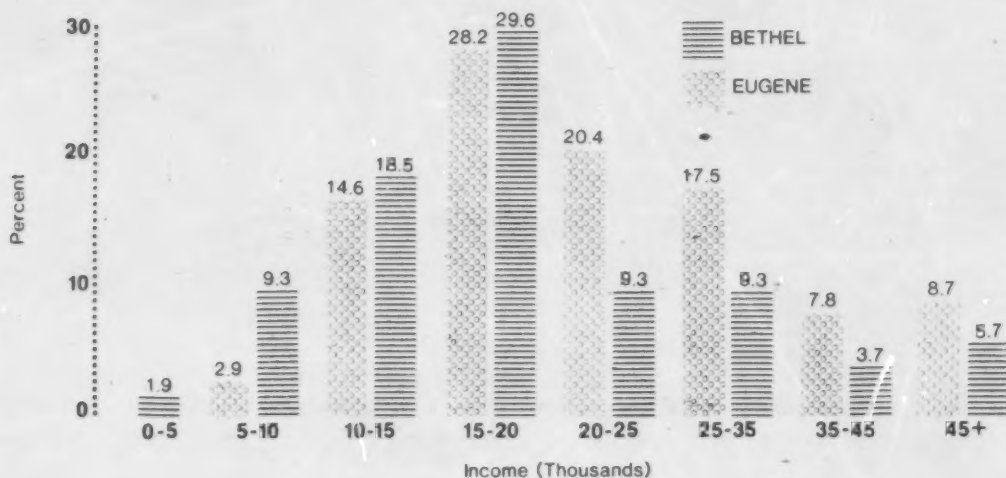


FIGURE 6 INCOMES OF NEW SINGLE FAMILY OCCUPANTS FOR EUGENE AND BETHEL

The District 4J Survey of New Housing provides some support for the contention that medium and lower income sectors in the metro area produce more children than higher income sectors. The age distribution (the life cycle variable) of inhabitants of new single family housing in Eugene is very similar to that of inhabitants of new single family housing in Bethel (Smit, 1979). The incomes of new single family occupants in Eugene are higher than those of the Bethel residences (see Figure 6). On the other hand, the average number of children per household for Bethel was 1.67 as compared to 1.32 for Eugene, suggesting that income and child bearing are inversely related. Unfortunately, Springfield was not surveyed. However, Lane County Housing Survey data do indicate that incomes in Springfield are lower than in Eugene. If the traditional relationship between child bearing and income holds, then overall increases in enrollment in Springfield and Bethel and an overall decline in Eugene can be explained in these terms.

An alternative, and perhaps more compelling explanation, of the different enrollment patterns in the three metropolitan school districts has to do with differences in housing costs between these areas. While income differences between these subareas are not as marked as we expected, Lane County Housing Survey data indicate differences in housing costs are quite substantial. As mentioned previously, twice as many people in Eugene spend more than \$400 per month on housing than is the case in Springfield. Bethel and Springfield also have more children per household than Eugene. If income differences between the areas are not great, then we can assume that most households are operating on similar budgets. Given budget constraints, households will choose to spend their income based on value relative to other goods and services. People who have children have less money to spend on other goods, including housing. It follows then that, all other things being equal, households with children will seek cheaper housing.

The implications of the above argument for District 4J are clear. If housing costs in Eugene continue to soar, Bethel and Springfield may become increasingly attractive to young families. Continued metropolitan growth, either through in-migration or increases in the fertility rate, may not boost enrollments in 4J but may, instead, result in disproportionately large increases in Bethel and Springfield.

Socio-Economic Characteristics and District 4J

For the urban portions of School District 4J, socio-economic indicators such as income and age are not available in a form that allows analysis of individual elementary attendance areas. Data from the Lane County Survey of Housing does, however, allow description and analysis by high school region. In this section each of the four high school regions: North, Sheldon, South, and Churchill, are characterized in terms of the following indicators: structure type, average number of bedrooms per dwelling unit, age-sex breakdown, and average monthly income. The nature of the relationships between child bearing and each of the first three indicators was discussed in the section dealing with life-cycle theory. The nature of the relationship between income and enrollments is described in the preceding section. A brief summary of each of these relationships is nonetheless appropriate here.

Different structure types produce, on average, different numbers of children. Typically, single family detached units produce more children than mobile homes, duplexes, or apartments (multi-family). Table 3 (page 45) summarizes average numbers of children produced by each type in Lane County. Number of children and number of bedrooms per dwelling unit is positively related. Table 2 (page 44) shows the increase in number of children with number of bedrooms for Eugene and Lane County. Neighborhoods which have a large proportion of their occupants in the fertile 24-49 age cohorts also tend to have disproportionately large numbers of children. Finally the relationship between income and number of children is not clear cut in Eugene. In the preceding section we suggested that when life cycle effects are controlled for number of children decreases with income.

The descriptions that follow should be regarded with some caution. The data was initially collected by aggregated census tracts and in some cases allows examination of variations within each of the high school regions. In other areas variations are masked because of the aggregated nature of the sampling units.

Regional Comparison

North Region

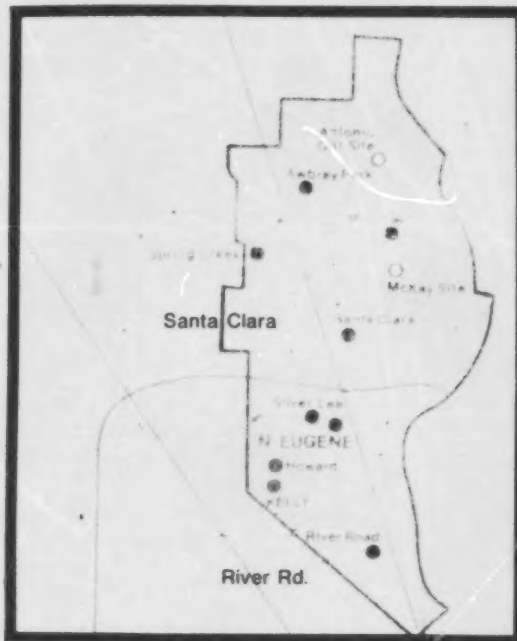
North Region (see Map 12) includes the areas known as Santa Clara and River Road. In 1972, to alleviate a potential overload on septic sewage systems, a moratorium was placed on subdividing land. This has effectively halted most residential construction in the area. It retains an almost rural character, although much of River Road is developed at urban densities.

Single family units constitute 85% of all the housing units in the North Region. In contrast, multi-family units are a scant 2% of the total stock, as compared to 30% multi-family available district wide. North has the highest average number of bedrooms for all regions.

Household income distribution in North Region is weighted towards the middle and upper incomes. There is very little representation (13%) for families with incomes under \$500/month. This distribution is very similar to Churchill Region's which also has a high proportion of single-family homes. Both of these regions have fewer low-income families with the bulk of households in the middle income brackets.

The age-sex breakdown is similar to the average for 4J with these exceptions: over-representation at the over-60 and under-5 categories and under representation in the 18-24 cohort. However, this is similar to national breakdowns as Eugene has greater than average numbers of 18-24 year olds and fewer children under 5.

These data indicate the North Region is producing more children per housing unit than any other region. This is probably true, but it does not mean a high total number of children. First, due to the exclusive use of septic tanks for sewage treatment, houses are relatively dispersed. Second, there are no new residential developments, and, therefore, no new influx of families with school age children. (This may change with annexation to the city or lifting of the moratorium.) Third, the total number of school age children is decreasing as the region experiences neighborhood maturation and as households age and fewer young children are produced.



MAP 12

Sheldon Region

Sheldon Region (see Map 13) closely resembles the overall district distribution of housing stock. Single family units form the bulk with 62% of the total housing units, 22% in multi-family, 11% in duplexes, and 3% in mobile homes. The average number of bedrooms is 2.63, slightly higher than the district average of 2.43.

Portions of the Sheldon Region vary greatly from the district norm. The two recently annexed areas, Goodpasture Island and the old Oakway Golf Club, are developing rapidly. Although much of the area is dominated by expensive single family houses, construction in the newly annexed areas is concentrating on multi-family units.

Monthly household income is much higher than the district average. Only 7% of all households in Sheldon earn less than \$500 per month, and over 60% have monthly incomes over \$1250 per month. In comparison, 20% of all households in the district earn less than \$500 per month and only 43% earn over \$1250 per month. Other data indicates that housing costs are much higher in Sheldon than elsewhere in the district, which is likely to exclude lower income families.

Comparing the age-sex cohorts, Sheldon has a much greater representation among the 35-55 year age group than average. It is also low in the 18-24 cohort. These deviations from the norm are consistent with the higher incomes and housing costs in the region. Upper income levels tend to be concentrated in the middle-age bracket and exclusionary for young adults.

Overall then, the number of children generated from existing housing will continue to decline except at the northern fringes. Existing single-family units are too expensive for young families and the multi-family units being built now have very low multipliers for children. This may change, however, if continued high-housing prices in the suburbs drive young families to multi-family units nearer the city center.



MAP 13

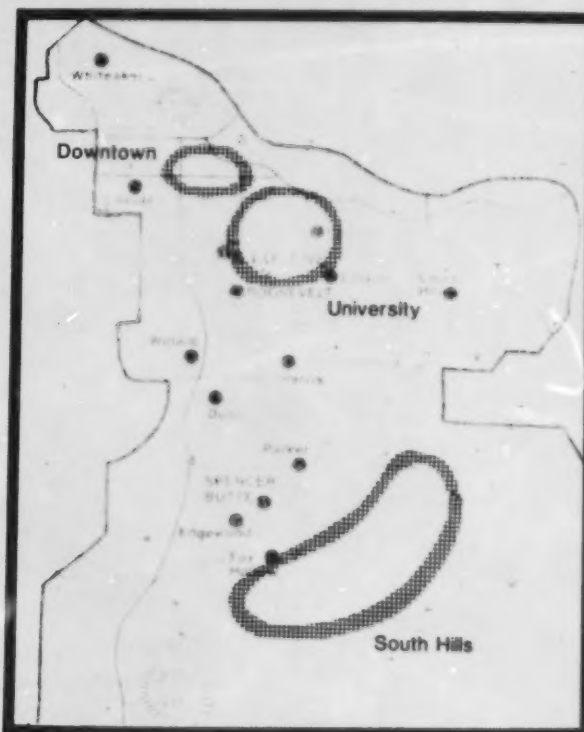
South Region

South Region (see Map 14) is the most heterogenous in the district. Three separate areas can be distinguished: Eugene's downtown, the University and environs, and the South Hills.

The central portion of Eugene is characterized by higher than average numbers of multi-family units and lower income households. On the average, over 60% of all housing stock are multi-family dwellings. The average number of bedrooms per unit is very low, only about 1.8, reflecting a large number of studio apartments. Income is also low, only 15% of the households take home over \$1250 per month, compared to the District average of 43%. Of course, this also reflects the much smaller size of most households. Other factors though, such as housing cost as a percentage of income, indicate that this is a low-income area relative to other areas.

Age-sex representation is also at variance with the rest of the district. Persons over 60 and between 18-24 are overrepresented, while those between 35-54, key income earners, and under 18 are underrepresented. These factors indicate enrollment will continue to decline in this area.

The rest of South Region represents a continuum more than two discrete areas. The University area, with its high number of multi-family units, lower-income and overrepresentation of 18-24 year olds represents one end of this gradient. On the other hand is the South Hills with its high percentage of single family homes, higher income households and overrepresentation in the 35-54 age group. The average number of bedrooms is a good indicator of this trend. It stretches from 2.54 around the University, to 2.56 in the tract homes to the west near South Eugene High School and to 2.79 in the southwest suburbs. This last trend correlates strongly to the number of children and their location. As expected, enrollments are declining in the northern section while increasing in the south. Continued construction of single family planned unit developments in the South Hills at the present rate may boost this to some degree.



MAP 14

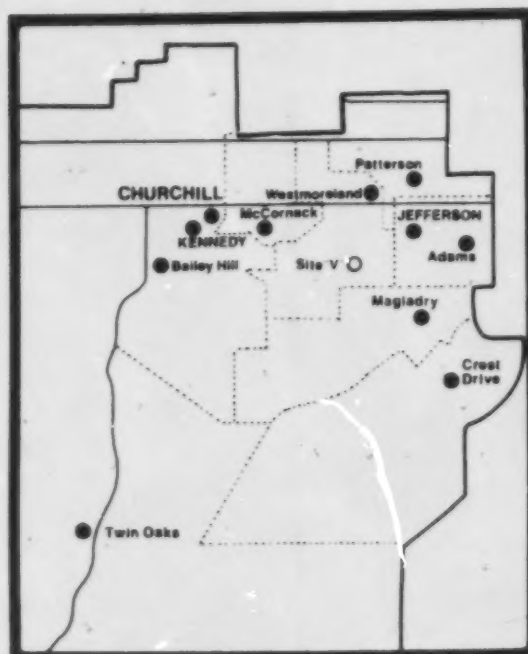
Churchill Region

The Churchill Region (see Map 15) is made up of newer, suburban housing, developed at subdivision densities throughout. Churchill has socio-economic features similar to the city averages. Single family homes constitute 62% of the housing stock. Multi-family units form 27% of the total, duplexes 6%, and mobile homes a scant 4% of total housing units in the region.

Middle-incomes dominate in the urban area with a small group of lower-incomes towards the center and scattered high-income areas near the periphery. This is similar to the rural sub-region's mix which contains fewer low-income persons.

Age-sex cohorts are also similar. Again, the low-income area identified above has a greater representation of older (60+) and younger (18-24) persons. These represent similar population characteristics to the University neighborhood.

Overall then, population growth within this region will continue to generate high numbers of children per unit. This is a product of the large percentage of single family homes and middle-income households present.



MAP 15

Summary

In conjunction with economic land value theory, life-cycle theory explains, in very general terms, why enrollments are likely to be higher in peripheral than in central areas. Models of socio-economic structure suggest that not only will enrollments vary between central and peripheral areas, but that they will also vary between various socio-economic subareas. While these theories are useful in explaining enrollment variation in the Eugene-Springfield metropolitan area, they are too general to be of much value for facilities planning within individual school districts. They do, however, provide a general contextual framework within which individual districts can place themselves. One major problem of the theories described above is that they explain differences in enrollments between central and peripheral areas in terms of differences in dwelling type (apartments and higher density housing vs. low density single family housing). Yet in Eugene as much as 60% of the total housing stock is of the single family variety. Considerable enrollment variations between neighborhoods exhibiting the same housing types (single family homes) has been observed in Eugene. Clearly, more detailed theories are needed to explain this kind of variation. It is for this reason that we now introduce theories of neighborhood change and their implications for facilities planning in District 4J.

Neighborhood Change and Enrollments

In the discussion that follows, an attempt is made to explain variations in intra-district enrollments at a more micro-level. The unit of analysis is the neighborhood. The section is organized into three parts. The first part describes the theory of neighborhood maturation and its relevance in District 4J. In the second part, the concepts of neighborhood succession and conversion are outlined.

Neighborhood Maturation

It is a well known fact that enrollments in local schools decline as neighborhoods age. This process is commonly called "neighborhood maturation" and has major implications for facility planning. The theory is based on two premises. The first is that the people who initially settle in a neighborhood have similar family characteristics. Typically the first settlers of neighborhoods are young families with young children. This is the case because the move to a new single family home is very often a response to changing space needs associated with changes in the life cycle. The second premise upon which the theory of neighborhood maturation is based, is that most of the new settlers should remain in the neighborhood for a period of time corresponding to the child rearing phase of the life cycle. Put another way, this means that the majority of the initial inhabitants of the neighborhood will remain there at least as long as their children are still of school age. If the inhabitants of the neighborhood

are relatively stable, then the neighborhood will exhibit uniform changes in family characteristics through time. The appropriateness of the theory in Eugene, depends on the extent to which the two major premises namely, uniform initial characteristics and stability, are satisfied here. Evidence from a number of sources which suggests that neighborhood maturation may very well be a viable concept in Eugene, is presented below.

The school district's (1978) survey of new housing provides detailed information about the family characteristics of the occupants. Most of the new housing surveyed was in new neighborhoods at the periphery. Consequently, this data is particularly useful in determining whether the initial inhabitants of new neighborhoods are similar. A total of 225 new homes were interviewed. In Eugene 64% of the occupants of new single family homes had children at home. In neighboring Bethel the corresponding figure is 80%. Differences between the two may be related to differences in income. The average number of children per new household in both Eugene and Bethel is considerably higher than the city of Eugene as a whole. An examination of the age characteristics of the children in new housing provide further evidence that the concept on neighborhood maturation may be viable in Eugene. Age breakdowns for both Eugene and Bethel are summarized in Table 4.

Table 4
Age Characteristics of Children
Produced by New Housing

Age Type	Eugene		Bethel		Total	
	Children Absolute Frequency	Children Relative Frequency	Children Absolute Frequency	Children Relative Frequency	Absolute Frequency	Relative Frequency
Pre-School	65	38	36	40	101	39
Elementary	63	37	30	33	93	35
Junior High	22	13	14	16	36	15
High School	17	10	8	9	25	9
Out of School	4	2	2	2	6	2
Total	171	100	90	100	261	100

As many as 76% of the children in new homes in Eugene are of pre-school or elementary school age. The ratio of elementary pupils to secondary school pupils approaches 2:1. The corresponding ratio for the whole of School District 4J is 1:1. In Bethel the results are very similar. Here 73% of the children are of pre- or elementary school age. These data provide strong indications that the initial family characteristics of inhabitants of new housing in Eugene are indeed very similar. It also indicates that inhabitants of new housing are characteristically in the early stages of the child-rearing phase of the life cycle. This assertion is supported by evidence concerning the age distributions of inhabitants of new housing. As reported previously, 68% of Eugene respondents and 74% of respondents from Bethel are in the age cohort 19-39 years of age. By comparison only 35% of all metropolitan inhabitants (older than 18) are in the age group 19-39 years of age (per LCOG estimates Population, Households & Employment, 1978).

The premise that neighborhoods remain relatively stable over time is more difficult to measure. However, the school district survey of new housing again provides some useful information. Two measures of stability were used in the survey. First, if the degree of home ownership is assumed to be positively related to stability (Holden and Shepard 1970), then home ownership information provided by the survey should provide indications of the stability of new neighborhoods. Second, some direct questions about intentions to move are included in the survey. The findings are reported below.

Home ownership is very often an indication of commitment to a neighborhood. Buying a house is one of the most important purchases that a household may make during the life cycle. It is for this reason that owners tend to be more stable than renters. The proportion of occupants of new housing in Eugene that own their new homes is 62.6% while the remaining 37.4% are renters. When single family homes only are considered, 83% of the occupants are owners. On the other hand, only 16.6% of multi-family inhabitants are owners. The evidence suggests that single family neighborhoods are likely to be considerably more stable than their multi-family counterparts. The data on intention to move supports this contention. As many as 50% of multi-family inhabitants plan to move within one year. The comparable figure for single family inhabitants is 19.5%. Furthermore, 50.8% of those living in single family homes have no intention to move at all, as compared to 32.7% for multi-family dwellers. If half of the single family inhabitants plan to stay, then half plan to move. However, intention to move does not mean that a household will actively make the move. Empirical studies have shown that only a third of those who express an intention to move actually do move (Berry and Horton 1970). This suggests that as many as 75% of the occupants of new single family homes will remain in the neighborhood during child rearing.

Examination of home ownership data for Bethel reveals some interesting differences. The incidence of home ownership in Bethel is considerably lower. More than half (57.4) of new housing occupants are renters and only 42.6% are owners. The proportion of new single family homeowners in Eugene (83%) is double that of Bethel. This suggests that neighborhoods in Eugene are likely to be more stable and the impacts of neighborhood maturation more severe than in Bethel. Again, the data shows that considerable differences in the factors affecting enrollments exist from one subarea of the metropolitan area to another.

Apart from the basic assumptions concerning similarity of family characteristics and stability, the nature and magnitude of neighborhood maturation is also related to a number of other parameters. Changes in any one of these parameters will result in changes in the maturation process. For example, there is evidence that maturation is closely linked with dwelling type. Maturation is most severe in neighborhoods dominated by single family units. Medium-density garden apartments and townhouses, on the other hand, tend to have a stabilizing effect on enrollments through time. This is because of the higher turnover that is characteristic of these medium-density housing types. There is also evidence that garden apartments and townhouses are becoming increasingly attractive to young families who, because of the spiralling price of housing, cannot afford a new single family home. Medium-density housing becomes a temporary alternative while the family builds up enough capital to buy a single family home. In one of the largest door-to-door surveys conducted, the Center for Urban Policy Research at Rutgers University (Sternlieb et al 1973), established that there is little difference between attached townhouses and single family homes as regards child bearing characteristics. A total of 7500 households were interviewed. Attached three-bedroom townhouses produced an average of 1.026 children per unit as compared to 1.293 for three-bedroom single family homes. Furthermore, the average number of children in townhouses was found to be remarkably consistent through time and appeared to be independent of the age of the neighborhood. The policy implications of this finding are twofold. First, the existence of townhouses in a neighborhood can serve to stabilize enrollments and mitigate the effects of declining enrollment. Second, if the price of single family housing continues to rise, attached townhouses may become the permanent residences of young families. This suggests that, in time, maturation will also apply to townhouses. There is little current evidence indicating that the shift to attached townhouses is occurring in Eugene. However, there is a need for a study which explicitly examines the child bearing characteristics of this housing type in Eugene.

In addition to dwelling type, the nature and magnitude of the maturation process is also affected by fertility rates. For example, if a couple has three children, each of which are five years apart, then the child rearing phase for that couple is 28 years (assuming that children leave home on graduation from high school at the age of 18). If the same couple has only one child, then their child phase is only 18 years long. We described

falling fertility rates both nationwide and locally in a previous section. At the neighborhood level, this means that the impacts on schools of children produced by initial settlers of the neighborhood will be felt for a shorter period of time. The net effect is to decrease the time span between initial settlement of a neighborhood and a marked declining in local enrollments caused by maturation. Evidence from the school district survey of new housing, indicates that this may well be the case in Eugene. A surprisingly high 80.7% of respondents expect no further increase in family size. Of those respondents who did plan to have more children, 63% expected to have only one more child. No one indicated that they expected as many as three additional children.

Summary

Neighborhood maturation refers to a process whereby enrollments in a local school decline as a neighborhood ages. In an urban context, this means that enrollments will be highest in the newest neighborhoods which are usually near the periphery.

The theory of neighborhood maturation is based on two premises. The first is that the initial settlers of neighborhood should exhibit relatively uniform family characteristics. The second is that the neighborhood should remain relatively stable over time. Evidence from a survey of new housing in Eugene and other sources, indicate that neighborhood maturation may be a viable concept in Eugene.

The nature and magnitude of the effects of neighborhood maturation depend on a number of additional factors. Severe maturation, for example, is strongly associated with the single family housing type. The existence of attached townhouses in a neighborhood may mitigate the impacts of maturation because of the high turnover of respondents that is typical of this housing type. Declining fertility rates, on the other hand, will probably decrease the time span between initial settlement of a neighborhood and marked decline in neighborhood schools. In the section that follows, we investigate what happens to neighborhoods after the maturation process has taken place.

Neighborhood Succession

While the process of neighborhood maturation is well understood and relatively well substantiated, much less is known about what happens to a neighborhood (enrollment-wise) after it has matured. Traditional concepts of neighborhood change such as "succession" and to a lesser extent "conversion" do not appear to be appropriate in Eugene. In the context of neighborhood maturation, "succession" has a specific meaning. The notion implies that once the children of the initial settlers of a neighborhood have moved through the schools, these initial settlers will move out and be

replaced by a new generation of young families. The only difference between the two generations of families may be an income difference. The housing stock in the neighborhood has aged (some 15 to 20 years) since initial settlement and, therefore, the housing may filter down to a lower income group. If income and number of children are inversely related, then (*ceteris paribus*), the arrival of the new lower income settlers, may boost enrollments above the level when it was initially settled.

In essence the theory of neighborhood maturation and succession implies that neighborhood enrollments will be characterized by a series of waves through time. As appealing and theoretically neat as the notion of succession may be, it does not seem to fit the facts in Eugene. There is very little evidence that any of the older neighborhoods of Eugene have been rejuvenated at any time by a sudden influx of young families. The fact of the matter is that, at this time, we are largely ignorant about what happens to a neighborhood after it has declined. A more accurate description of our limited understanding of neighborhood enrollments would be a simple cycle in which a neighborhood was first established and enrollments increased, then the neighborhood matured and enrollments declined. Yet the resolution of this problem is of utmost importance and has major policy implications. Enrollments in older neighborhoods in Eugene have continued to decline steadily since the 1960's. If they continue to decline the closure of some central schools may be necessary. If on the other hand, enrollments in these older areas can be expected to increase in accordance with the notion of "succession", then school closure may not be warranted, even if enrollments are at very low levels.

There are a number of reasons for believing that succession will not occur in older neighborhoods in Eugene. There are also reasons to believe that it will occur. Perhaps the weakest link of the succession theory is the assumption that people will leave a neighborhood once their children have passed through the schools. We do not know how long it will take before they will make the move, if they make it at all. Byrne (1979) points out that in the post-child stage of the life cycle, the move to a smaller unit is not prevalent.

"...older couples whose need for space and security has lessened with the departure of children from the home often will not readjust their housing choices downward. Older families are more stable, somewhat resistant to change, and tend to stay put rather than move to smaller dwellings even if that is their goal."

Byrne goes on to add that the spiralling price of housing may be one of the primary reasons why older couples are unlikely to move.

"The advantages of remaining in a dwelling that was financed at significantly lower rates can outweigh the desire to move to smaller accommodations. The choice, for example, may be between remaining in a house that originally cost \$25,000 and was financed at 6%, and moving to a smaller condominium that costs \$75,000 with 11% financing. Even with a transfer of substantial equity, monthly housing payments can rise."

If older couples are, as Byrne suggests, staying put, then the time lag between the initial enrollment and decline associated with maturation is likely to be very long. Increasing life expectancy and lower fertility rates is increasing the number of years that older couples spend together after children have left the home. Deaths or departures from the neighborhood are likely to be so erratic that the notion of a sudden invasion of a neighborhood by younger families seems untenable.

Another reason why succession may not be applicable refers to changing neighborhood environment as the city grows and as the neighborhood ages. Streets become busier as new residential neighborhoods spring up around the old neighborhood generating additional traffic which must pass through the older neighborhood to get to the center. Students at the University of Oregon (Department of Political Science) have recently completed a survey in one of the older neighborhoods of Eugene, the Whiteaker neighborhood. While dealing with a number of issues, the survey focused on traffic problems in the neighborhood. More than half of the respondents perceived that traffic levels in the neighborhood were a problem (63%). Significantly, a whopping 90.2% of respondents with children at home said that traffic was a problem. Young families have traditionally put a high value on quiet, uncongested neighborhoods for rearing children. As the periphery is the location where the demand for quiet neighborhoods is most likely to be satisfied, it is probable that young families will continue to seek housing there. Lipton (1978) in a survey of more than 300 residences in Eugene, found that people with children indicated that they would not move back to the central city areas even if congestion and other problems were cleared up. The reason for this is probably two-fold. First, as cities grow, land values in central areas increase. This means that young families can buy less space near the center than at the periphery. Because young families usually place high priority on space, they will most likely not be willing to move to central neighborhoods. The second reason concerns an agrarian ideal for child rearing which also manifests itself in demand for space.

There are also some reasons for believing that neighborhood succession may become a viable concept in Eugene. Primary among these reasons is the cost of housing. If housing costs continue to rise at a rate greater than the rate of inflation, there is a possibility that young families will not be able to afford newer homes at the periphery. They might consider buying older and more dilapidated housing in older neighborhoods and then renovate. After noting a marked rise in enrollments (more than sixty pupils) in an elementary school in an older neighborhood in Eugene (Edison), Byrne (1979)

set out to determine whether the change in enrollment was due to neighborhood succession. He postulated that if neighborhood succession was taking place, then new children in the neighborhood school should be coming from homes that had recently changed hands. He found that increased enrollments at Edison are not significantly related to sales activity in the neighborhood. Only 16.1% of the 118 students whose origins he pursued, could be linked to a recently sold dwelling. Byrne concludes that much of the enrollments increase is due to the availability of rental units in the neighborhood and to cross attendance boundary migration. What Byrne's findings do suggest, however, is that rental housing is producing more children than in the past (the stock of rental housing has remained relatively unchanged). This supports the speculation that young families are temporarily residing in rental housing because of the exorbitant price of new single family homes. If this is true, then the incidence of children in rental housing should be increasing. If neighborhoods which have a high percentage of rental housing become the temporary residences of young families, then enrollments in neighborhood schools should increase slightly and then stabilize rather than decrease any further. However, it is also possible that the spatial location of rental housing may be changing. New rental housing is being provided in peripheral areas. New rental housing at the edge of the city provides young families with quiet neighborhoods and housing that they can afford. A study which explicitly examines both the increasing incidence of children in rental housing and the changing location of this housing is required.

Neighborhood Conversion

Neighborhood conversion is perhaps a more viable concept in Eugene than is neighborhood succession. As described earlier, neighborhood conversion occurs when the structures and land in a neighborhood are converted to other uses. Such conversion is often associated with city growth. Land values near the commercial business district increase because of the increased demand for this land. If the market is unconstrained, then the growing business section will bid away land currently used for residences. The conversion of the mansions of a previous era to business offices for realtors, dentists, lawyers, and physicians is a common sight in most cities and Eugene is no exception. Such conversion often heralds the beginning of major changes of land use in neighborhoods. Clearly, if conversion of this kind does occur, the demand for school services in neighborhoods near the central business district may disappear entirely.

Neighborhood conversion, as it would occur in a free land market, is however, very much constrained by the planning process in Eugene. People living in central neighborhoods have recognized that the quality of life in their neighborhood is threatened by neighborhood conversion. Neighborhood plans and the 1990 Metropolitan Plan reflect these concerns by including commitments to preserve the quality of life in neighborhoods. Zoning is the most currently used tool to prevent the incursion of commercial and other undesirable land uses into neighborhoods. Nonetheless, city planners are

actively encouraging the conversion of many traditionally single family neighborhoods to multi-family use by offering tax breaks to developers who locate multi-family housing projects in these neighborhoods. As described in earlier sections, if the multi-family units become starter units for young families with children, major increases in the number of multi-family units in a neighborhood may boost enrollments.

Of the many variables involved in predicting and managing the intra-district distribution of demand for school services, land use planning is perhaps the most important. By understanding the processes that give rise to the current distribution of enrollments, facilities planners can use the land use planning process to help mitigate the effects of declining enrollments in some part of the district and crowding in others. Furthermore, the land use process is aimed at directing the nature and magnitude of residential development, thereby facilitating the prediction of enrollment pressures. Because of the importance of land use planning, we devote a separate chapter to it.

CHAPTER V

ESTABLISHING THE LINK: LAND USE PLANNING AND SCHOOL FACILITIES

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ESTABLISHING THE LINK: LAND USE PLANNING AND SCHOOL FACILITIES

This chapter describes how the current land use policies and processes are relevant to school facility planning. In order to understand the relevance of land use planning it is important to understand the purposes of a land use plan. This chapter begins with such an explanation. The chapter also explains how the school district is active in the land use planning process and gives a summary of how current land use plans affect the school district.

The Purposes of Land Use Plans

In 1974 the Oregon Legislature passed Senate Bill 100, one of the most comprehensive land use planning laws in the nation. This legislation requires all cities and counties within the state to develop land use plans that comply with the Land Conservation and Development Commission (LCDC) statewide goals. Special districts, including school districts, are also required to coordinate their programs and planning regarding land use activities with local governments.

Land use plans are intended to guide the character and nature of growth and to provide a basis for coordinated public and private action. Land use plans formulated by Lane County and the City of Eugene include an analysis of many physical, social, and economic elements including the coordination of land uses, management of natural resources, transportation needs, and provision of public utilities and services. Coordination of these various elements can minimize conflicting uses, and ensure the adequate and timely provision of services. A plan is intended to serve as a guide and a basis for decision making to public officials, public agencies, and private interests. Through a public planning process, problems can be identified and possibly resolved before reaching crisis proportions. Land use plans generally consist of two parts, a plan text and a plan diagram. Residential, commercial, and industrial land uses and the shape and density of the urban form are described graphically in the land use diagram. The accompanying text contains goals and recommendations which serve as policy to guide future development and land use decisions. The provision of services, including the provision of school services is an important component of this policy statement.

The relationship between land use designations and school enrollments has been suggested throughout this report. To briefly reiterate, there is a strong correlation between various types of residential development and the number of school age children. Lower density single family detached housing units characteristically generate the most children; over twice as many as higher density multi-family units. The type, density, and location of residential land all contribute to produce varying impacts upon the schools.

The planned urban form also has implications in the provision of school services. A more compact urban form tends to locate new residences closer to existing facilities, thereby shortening the length of bus routes, reducing the number of collection points and making maximum use of existing schools. In contrast, a low density urban form maximizes busing distances and aggravates the problem of declining enrollments in the central city. This results in a "capacity dilemma" for schools located on the urban periphery.

Hence, there are three good reasons for the school district to be actively involved in the land use planning process. First, it is mandated by state legislation; secondly, the location and density of future residential development will impact (either negatively or positively) upon the school facilities; and last but not least, the plan text policy regarding the role of the school in the community should be consistent with the policy and resources of the district.

The School District's Role

The school district can be active in two ways. First, the school district can make an impact upon the formulation of land use plans. In this way, plans and policies of local government will be consistent with the needs and plans of the school district. Second, the school district can monitor and provide information about residential development on an on-going basis.

The school district has a critical interest in where in the urban area residential development will be allowed to take place. To a great extent, the school district benefits from this information in its facility planning. The ability to predict where families with children will be living five to ten years in the future greatly reduces the speculative nature of future school site acquisitions and plans for adjusting school facilities to meet needs. Land use plans make specific designations for areas to be developed as residential areas as well as designating the approximate density (i.e. single family vs. multi-family) at which these areas will be developed.

The school district also has the option of participating in the formulation of land use plans. In this process the school district can reverse its traditional reactive role by designating which areas should be residential in the plan. Areas located near schools or school sites would be developed so that overextension of school district facilities is avoided.

On an on-going basis the school district can monitor proposed residential development. The school district already has an informal system of communication with local planning agencies. Local planning agencies send information about proposed development to the school district for input. The school district estimates the impact of the specific development on the local schools and makes specific recommendations about whether the school can accommodate the children, how the students will be transported to schools, and comments on a design problems which might interfere with the

safety of the children on their way to school. These comments are included in the planning staff notes which are used in the approval process. Occasionally the concerns expressed by the school district are translated into conditions which the developer must meet prior to approval.

The school district planning staff also accumulates data on the proposed developments in each attendance area. This information is used to continuously monitor proposed growth and to alert city and school officials to potential problems caused by rapid rates of residential development.

Current Land Use Plans Affecting School District 4J

The remainder of this chapter is devoted to a brief analysis of the major land use plans and policies which affect School District 4J. There are several land use plans, either proposed or adopted, which guide the growth and development of the area encompassed within 4J's boundaries. They are: the 1990 Metropolitan Plan, the Lane County sub-area plans, and the City of Eugene Plans.

1990 Plan

One of the most significant land use plans affecting 4J is the 1990 Metropolitan Plan, which serves as a comprehensive planning guide for the entire Eugene-Springfield metropolitan area. The 1990 Plan is currently in the process of its first five-year update. As a result of this review process some revisions were made in the plan text and a new land use diagram was developed. The text and diagrams have been reviewed in public meeting and comments submitted by both public agencies, including School District 4J,¹ and by local citizens. Before the plan becomes final, it will be adopted by the City of Eugene, the City of Springfield, and Lane County.

The policies and guidelines set out in the plan greatly affect the school district in facility planning. The plan, through the diagrams, controls the location and density of future residential growth. The plan text contains several policies which also have impact on the school district. The policies which affect the school district are summarized first, then the impact of the location of residential growth is analyzed.

¹For a detailed discussion of the 1990 Metro Plan Update, see: The Update of Comprehensive Metropolitan Plan (1990 Plan): A Report of School District 4J's Input and Metro Area General Plan: The School District's Analysis

Policies which affect school districts

The policies, goals, and objectives stated in the plan text emphasize the need to coordinate the location, timing and financing of public facilities (i.e. schools), which influence the growth form of the metropolitan area. The text recommends that the impact of residential growth on schools be mitigated by encouraging a mix of dwelling types and the phasing (over time) of single family residential construction. While it acknowledges that the school district will meet school enrollment demands through a variety of means, including the possibility of busing students, the plan text also emphasizes the desirability of maintaining elementary and community schools in central city areas. This may be a difficult financial problem for the district, given the problem of declining enrollments in central city schools and the capacity dilemma. The updated version includes a recommendation recognizing the financial burden of operating these centrally located schools with low enrollments which reads:

"Support financial and other efforts to provide elementary and community schools in central city areas in order to maintain and increase the attractiveness and stability of those areas for residential purposes."

The plan text also places a priority on certain urban services for the annexation and eventual development of vacant land. Two categories of services are described as "'minimum' services which are services which absolutely must be provided prior to annexation and 'full range' services which are those which should be provided subject to demonstrated need and budgetary priorities". The updated version of the plan changes the designation of school districts from a "full range" service to a "minimum" service.² The rationale for this change is contained in an October 1978 report.²

And last, text findings reflect that "projected school enrollment increases will not be evenly distributed...the Eugene (4J) district will probably continue to decline into the early 1980's before beginning to increase" and recommended "school districts shall continue to meet peak school child enrollment demand through a variety of means, thus possibly reducing or postponing the need for new, permanent school facilities". An additional recommendation advised that school districts in Eugene and Springfield address the possibility of adjusting their boundaries where "a single, otherwise internally cohesive area is divided into more than one school district".

²An Analysis of Reclassification of Public Schools As A Minimum Level of Service in the Comprehensive Metropolitan Plan Document (1990 Plan), Rose Hesse, October, 1978.

Impact of location of residential growth on school districts

The most important impact upon the provision of school services results from the allocation of residential land. Therefore, the location and density of residential land, designated in the plan diagram, is of utmost concern to school districts. The land use designations which place residential land near existing facilities, near schools projected to have continuing declining enrollments, or which otherwise minimized potential busing distances will be the most favorable for the provision of school services. The impact on all three school districts should also be considered. As the reader will remember, Bethel school district currently has a high rate of residential development and increasing enrollments. Springfield school district has declining enrollments in its central city schools, increasing enrollments in outlying areas and, thus, shares Eugene's capacity dilemma. The three school districts have taken the stand that the most compact urban form is desirable, and an even distribution of residential growth between the three districts would facilitate the future provision of school services. This means that a smaller urban service boundary and a higher density of residential growth would be easiest for all three districts to accommodate. Designations which relieve the pressure on Bethel district and bring growth to Eugene's and Springfield's central areas are needed.

The plan draft currently being presented contains a new location for the urban service boundary. The major complicating factor in the plan draft is the sewer problem in the River Road/Santa Clara area. This area could easily accommodate growth if the sewer problem is solved. If the problem is not solved, this growth will have to be accommodated elsewhere. An alternative is presented in the plan draft for accommodating this extra growth. This growth is targeted for the Willow Creek basin, in the Churchill area. This analysis identifies specific areas which have been targeted for growth and identifies the impacts upon the school district.

Growth in the North Region. The North Region is the River Road/Santa Clara region. This area, as described, previously does not currently have sewer service and is under a growth moratorium. If this problem is solved, the plan calls for increased density of residential development. Six percent of the overall growth of the metropolitan area would be accommodated in this region. The majority of this area is designated as low density in the plan. Currently the area is developed far below the standards allowed by this designation so that considerable growth can still occur in the area. The impacts on the school district could be sufficient to reverse the current declining enrollment trend, but, with phasing of growth, probably would not place a strain on the overall capacities of most of the schools in the area.

Growth in the Sheldon Region. The Sheldon Region is targeted for additional growth and the urban service boundary extends beyond the currently developed area. Low density growth is targeted for the majority of the space. Medium high density development is targeted for the

Goodpasture Island area, for a section adjacent to the country club or Country Club Road, the area between Cal Young Junior High and Coburg Road, and an area adjacent to the Cone Breeden property north of Beltline. There is also a small high density area located next to the country club.

Seventeen percent of the overall growth in the metropolitan area would be accommodated in this region. The impacts on the school district could be major. The district does not have space in schools to accommodate major and/or rapid growth. Additional construction or extensive busing of students may be necessary in this area. This problem is also addressed in the special issues section of this report.

Growth in the South Region. The South Region is targeted for additional growth by extending the urban service boundary beyond the currently developed area to Spencer Butte Park. Most of these areas are designated for low density development. There is medium and high density development slated for the areas adjacent to downtown. And fairly extensive low density development is slated for the Laurel Hill area.

Fourteen percent of the overall growth in the metropolitan area would be accommodated in this region. The impacts on the school district would be major, but favorable if the growth is properly phased.

Growth in the Churchill Region. Additional growth is targeted by extending the urban service boundary south and east beyond Bailey Hill Road to an area bounded by Crow Road for low density development and targets an area along West 11th for medium and high density growth. In addition, the Willow Creek area has been designated for low density development should the River Road/Santa Clara area not be annexed. The development of the Willow Creek area would place an overload on schools in this area.

Eleven percent of the overall growth in the metropolitan area would be accommodated in this region (without the addition of the Willow Creek area). The impacts on the schools in the area probably depend on factors such as the cost of housing and the political events surrounding the plan adoption process. However, should the above mentioned areas be developed, the capacity of the schools in this region would be exceeded and extensive busing would probably be necessary. In order to engage in construction, the school district would probably also have to acquire sites in the growing area. With the addition of the Willow Creek area, the schools would be unable to accommodate the growth and further busing or building would be required.

Growth in the Bethel District. In the plan diagram, the growth that extended the Churchill Region eastward would be extended northward to cover the entire eastern edge of the Bethel District. Twenty two percent of the overall growth of the metropolitan area would be accommodated in this school district. Bethel schools are currently at or approaching capacity. This growth is likely to force the district to construct new schools.

Growth in the Springfield School District. Additional growth is targeted for Springfield. Thirty one percent of the overall growth of the metropolitan area would be accommodated in Springfield. Of the 31% of growth, 12% of this growth is targeted for the Thurston area. Springfield's capacity dilemma will be increased by this growth. Extreme busing or additional construction are possible. The Thurston area is the area of Springfield's district that is least able to accommodate growth.

City of Eugene Policies

The City of Eugene has established growth management and the preservation of neighborhood viability as important goals for the community. These policies are significant to the school district for two reasons. The city's policy of attempting to maintain residential viability of downtown neighborhoods and of supporting the concept of neighborhood schools, implies that the district should maintain low enrollment schools. As previously noted, the problem of declining enrollments is most severe in older central city neighborhoods. Secondly, growth management may result in compact urban form and increasing residential densities. This may influence the distribution of school age children within the district.

The City of Eugene's interest in growth management has been primarily focused on the geographical management of growth. In 1972, the City adopted the 1990 General Plan which included the urban service boundary concept. In accord with this concept of contained growth, the City has pursued policies directed at:

- 1) Renewal and revitalization of central Eugene neighborhoods
- 2) Intensification of land use in central Eugene
- 3) Identification of specific areas appropriate for intensive and less intensive residential development
- 4) Making efficient use of land within the urban service boundary

In 1976, the City Council directed that a growth management study be conducted for Eugene. Phase I was completed in December, 1976 and Phase II was completed in May, 1978. Phase I, essentially a review of existing conditions in Eugene, concluded that the urban service boundary was an effective growth management tool. In Phase II of the study, three scenarios envisioning different levels of growth were applied to the existing vacant land in Eugene. The study concluded that increased density will be necessary in order to accommodate the projected population growth within the

context of existing goals and the policy of compact urban growth. The Phase II report, issued in May, 1978, set out several recommendations aimed at allowing the city to efficiently accommodate residential growth at increased densities.

In addition, Phase II of the growth management study recognized the important relationship which exists between increased densities and the infrastructure (schools, sewers) needed to accommodate those densities. In analyzing the impact of growth upon elementary schools, the growth management report cited the District Facility Siting Report (1977) and noted that the phenomena of neighborhood maturation (i.e., the aging process of families within a given neighborhood) affects the level of elementary school enrollment. This report recognized the impact of the mix of housing types within a neighborhood and the fact that much of the land remaining between the city limits and the urban service boundary is in areas already experiencing near capacity enrollments (with the exception of Laurel Hill and Willakenzie school attendance areas).

The recommendations developed in Phase II of the study were evaluated in the Community Conference on Growth Management Studies in November, 1978. The fifth recommendation addressed the relation of residential growth to elementary schools and read as follows: The City should attempt to mitigate the impacts of residential growth on the area's elementary schools. Techniques suggested to implement this recommendation included: 1) encouraging a mixture of dwelling types, allowing multi-family in all areas of the city; 2) encouraging use of portable classroom facilities to meet peak demands on elementary schools; and 3) phasing single family residential construction and placing it in school attendance areas which currently have excess capacity.

A mixture of dwelling types which provide for a variety of different living situations, i.e., seniors, singles, and families with children, reduces the impact of development upon schools. The use of portable classroom, recognizes that neighborhood maturation processes will naturally cause peak demands on elementary schools during certain periods of time, while during other periods, the natural aging process of the population could, in fact, result in excess capacity in a particular school.

This recommendation is a significant step in recognizing and coordinating the relationship between land use, planning, and school facilities. It recognizes that elementary school capacities are affected by neighborhood maturation and new single family residential development which often tends to attract young families. Its intent is to suggest methods to accommodate elementary school age children in newly developed areas, and to reduce the "peaks" and "valleys" of elementary school enrollments within a particular attendance area which result from the process of neighborhood maturation.

The Community Goals Committee distilled the essence of the Community Conference on Growth Management and recommended a statement of policies and proposals relating to growth management be substituted for Chapter 3 in the Community Goals and Policies, 1974 document. Policy statement #1 proposed that,

"In growth management, the City should enlist the cooperation of EWEB and School Districts 4J and 52 to determine cost-effective geographical arrangements of growth, and these jurisdictions should cooperatively develop capital improvements programs which respond to these arrangements.

- a. The City should attempt to mitigate the impact of residential growth on the area's elementary schools. This would involve dealing with the problem of cyclical enrollment through the following actions: 1) encouraging the school district to meet peak demand through use of portable classroom facilities and assisting the districts to determine other uses for school buildings during periods of declining enrollment; 2) encouraging a mixture of dwelling types; and 3) phasing single family residential construction."

The proposed policy of coordinating growth management with existing school facilities greatly reduces the negative impact which growth could have upon the provision of school services. It allows for the most efficient use of existing facilities and recognizes the "capacity dilemma" problem of schools at the periphery. Similarly, Policy 3(d)(4) would minimize the problem of declining enrollments in central city schools. This policy states, "In all areas having excess school capacity, City policies should discourage conversion of residential property to non-residential uses."

Lane County Policies and Sub-Area Plans

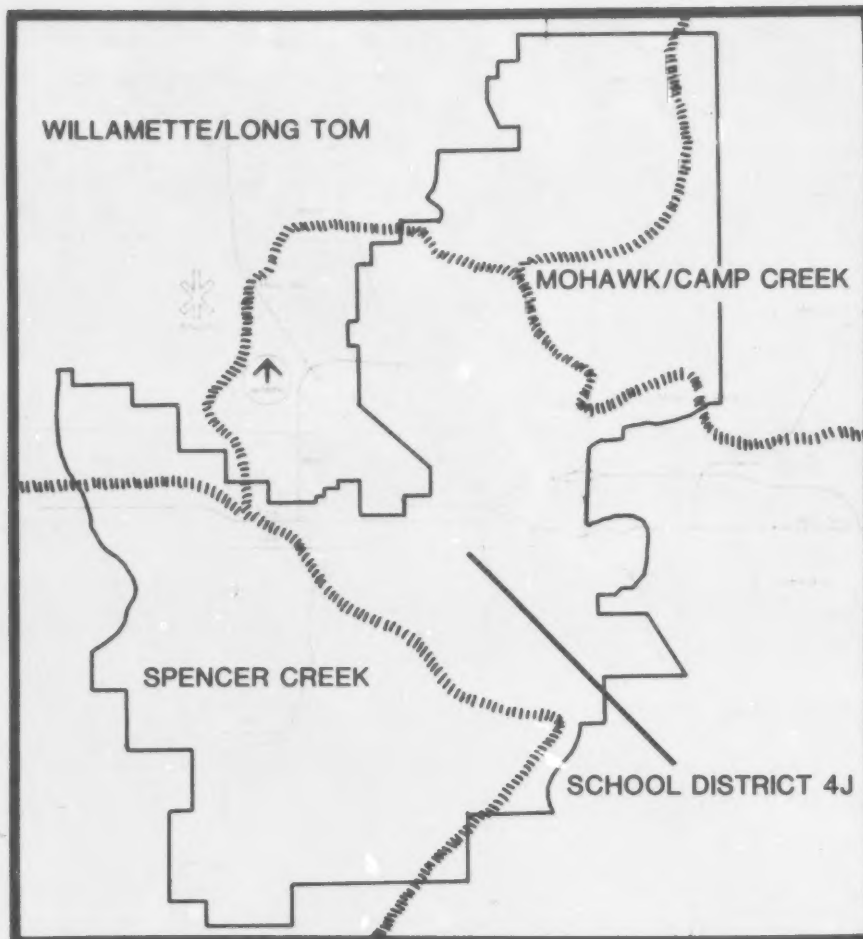
District 4J boundaries extend beyond the Eugene city limits and encompasses portions of unincorporated Lane County. Parts of this area are devoted to agricultural use, but there is also rural residential development. Current land use policies seek to concentrate growth and development within existing communities. It is not possible to determine if there is a trend toward the rural residential lifestyle. However, if land development policies within Lane County are relaxed, such development could be stimulated and create additional students within 4J district. The dispersed nature of development will require substantial, and expensive, busing of students. Currently, Lane County is proposing such a relaxation through an alternative rural land use program.

Lane County has adopted a general plan which establishes county-wide policies, and implements these policies by means of 13 sub-area plans throughout the county. The Lane County General Plan county wide policies provides standards from which specific land use actions, economic programs and developments can be established for the portion of the county outside the Eugene-Springfield metropolitan area. The plan contains policies to govern actions in rural areas that have direct and obvious relationships to policies, actions, and programs carried out within the metropolitan area. The county-wide policies address the problem of providing public services (i.e., school) to rural development. The policies related to the provision of adequate, conveniently located schools encourage that: 1) facilities be located within community growth centers; 2) school districts consolidate and make boundary changes which reduce student travel times and support community growth centers; and 3) school sites and facilities be reviewed to assure consistency with other governmental policies, plans, and actions. The general plan recommends that school boards submit proposals for school sites and facilities to planning agencies and that school officials review major changes in land use within school districts. School facility proposals are to be evaluated on a number of factors including existing and projected distribution, existing and projected land use patterns, the availability and cost of public facilities, services and utilities, and appropriate timing in relation to other developments.

Sub-area plans The division of each sub-area is based on a combination of natural features of the land and upon the existing pattern of development. The purpose of a comprehensive land use plan for each sub-area is to determine the nature of growth of rural Lane County.

The three sub-area plans which govern rural land development within 4J's district boundaries are: Spencer Creek sub-area, Willamette/Long Tom sub-area, and Mohawk/Camp Creek sub-area. The location of these sub-areas in relation to Eugene metro area is shown on Map 16.

The Willamette/Long Tom sub-area. This area is predominantly agricultural although non-farm use has been growing in significance. There has been a steady increase in residential developments of both individual homesites and large subdivisions around Coburg, Junction City, and Alvadore. School District 4J provides service to the area surrounding Ccburg. The enrollments at Coburg Elementary School have declined and are currently at 81% of school program capacity. Student enrollments have leveled off as a result of a balance between natural population increase and declining birth rates. However, this area is "directly in the path of suburban expansion from the metropolitan area" (p.32) and if land use regulations regarding rural development are relaxed, this area could experience major housing developments. Should changes occur in population growth trends, development patterns, or birth rates, it will be necessary to re-evaluate existing and potential school services.



MAP 16

LANE COUNTY SUB-AREAS AFFECTING SCHOOL DISTRICT 4J

The Mohawk/Camp Creek Sub-Area. Only a very small portion of this sub-area lies within the 4J school district. Residential development in this area is dispersed and of a rural nature. Students are currently collected and bused to Willakenzie Elementary school. Short-term development trends from 1970-77 indicate that the number of dwellings in the sub-area has increased substantially; however, school enrollments have remained stable. This sub-area is located north of the city of Springfield and is within the Marcola vicinity. In the event that the future brings major development of rural lands, the District 4J may find it logical and economically wise to negotiate a boundary change to place students into either the Marcola or Springfield school districts.

The Spencer Creek Sub-Area Plan. The Spencer Creek sub-area includes the land lying south of the City of Eugene near the west side of Spencer's Butte. For the past 3 years Lane County planners have been actively working with Spencer Creek residents to write a land use plan for the area. As of December, 1979, the plan was still "in progress."

An analysis by the Lane County Planning Staff revealed that there has been a significant amount of land partitioning in this area since July, 1976. This does not indicate actual residential development, but it does imply future development. Partitions have primarily occurred along the major transportation routes in the area. The trend towards "rural residential" development may be slowed due to physical land constraints. Spencer Creek area has experienced continuing problems with groundwater contamination and sewage disposal.

Residential development in Spencer Creek is not likely to overfill the 4J schools which serve this area. However, the actual impact is dependent upon the location and extent of development. Scattered or dispersed development will substantially increase transportation expenses by increasing the distance of bus routes and additional time, drivers, and vehicles required. It is appropriate for School District 4J to participate in the formulation of this sub-area plan and to voice their concerns regarding the impact of development upon school services.

CHAPTER VI

LONG AND SHORT TERM DEVELOPMENT

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LONG AND SHORT TERM DEVELOPMENT

In preceeding chapters we have advanced both theoretical and empirical evidence to show that there is a relationship between residential development and the spatial distribution of school age children within the school district. Evidence from the district's survey of new housing shows that new residential development in Eugene produces nearly twice as many children as the city average. Furthermore, the survey shows that new residential development has a proportionately greater impact on elementary schools than on secondary schools. The elementary/secondary school pupil ratio approaches 2:1 for new housing as compared with a 1:1 ratio district wide. This is a significant finding because the spatial component of the demand for school services is more important for elementary schools than secondary schools for two reasons. First, elementary schools are smaller and there are many of them distributed throughout the district. This means that they are more sensitive to variations in the location of children. Second, when it comes to getting to school, elementary pupils are more vulnerable than secondary pupils. It is for this reason that District 4J has generally attempted to provide school services in close proximity of the homes of elementary pupils.

Given the close relationship between new residential development and the demand for school services, it is clearly in the school district's interests to monitor such development and to plan to accommodate the projected impacts of such development. Knowledge of where new residential development is currently taking place in the district, provides indications of where enrollment pressures may be felt. Knowledge of where residential development is likely to take place in the future allows us to project future demand for school services. The purpose of this chapter is to describe school district efforts to acquire such knowledge. In the first part of the chapter we use a number of indicators to describe current residential development activity in the district. The information provided in this section is useful for pinpointing areas within the district in which severe enrollment pressures will be felt in the next five years. In the second part of the chapter we describe school district efforts to develop a methodology for predicting 10-15 years in the future. The methodology is interesting because it utilizes many of the theoretical and methodological constructs that have been described in this report and has the potential to be a very useful facilities planning tool.

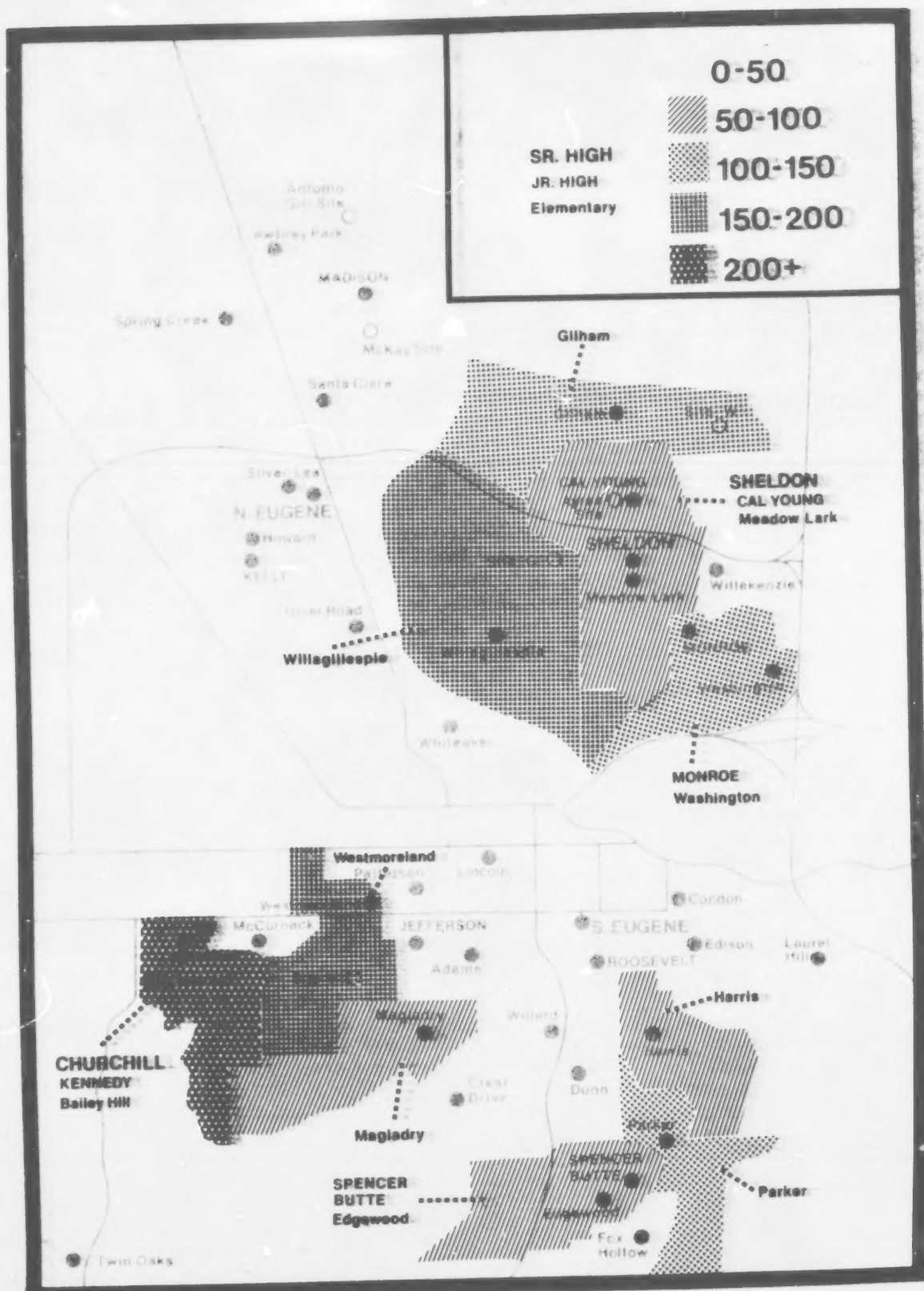


FIGURE 7 BUILDING PERMITS FOR SINGLE FAMILY UNITS
BY ATTENDANCE AREA SINCE 1976

Development: Short Term

Two indicators are used to describe development activity. Building permit data are used to describe the location and magnitude of current residential development. Development proposal data are used to provide indications of where such residential development can be expected in the near future.

Building permit data

Building permit data are perhaps the best indicators of current development activity. According to L-COG, the average time lag between the issuing of a building permit and the actual completion of the dwelling unit is six months. Their data also show that the issuing of a building permit almost always results in the construction and completion of a dwelling unit. For the purposes of this report, building permit data for 1976, 1977, and 1978 were examined. These data are available by elementary attendance area. Unfortunately, building permit data for the first six months of 1979 are not yet available in this form.

Figure 7 provides a graphic representation of the number of building permits issued for single family units in each attendance area since 1976. By far the greatest number of such permits were issued for the Bailey Hill attendance area. The 336 permits issued here is twice the number for the next highest attendance area. Not surprisingly, the addition of portable classrooms at Bailey Hill Elementary has been necessary to accommodate pupils generated by new development. Attendance areas with more than 100 permits include Gilham, Willagillespie, Washington, Ellis Parker, and Westmoreland. All of these are peripheral attendance areas. The central city attendance areas of Lincoln, Patterson, Whiteaker, Condon, Adams, and Willard all have had less than twenty single family unit permits issued since 1976. Apart from Howard attendance area, where a few building permits have been issued, no permits have been issued in the North Region. This is because of the building moratorium in the River Road/Santa Clara area. Very few building permits were issued in rural Lane County. In summary, considerable single family building permit activity since 1976 has occurred in northeastern, southeastern, south, and southwestern periphery of Eugene.

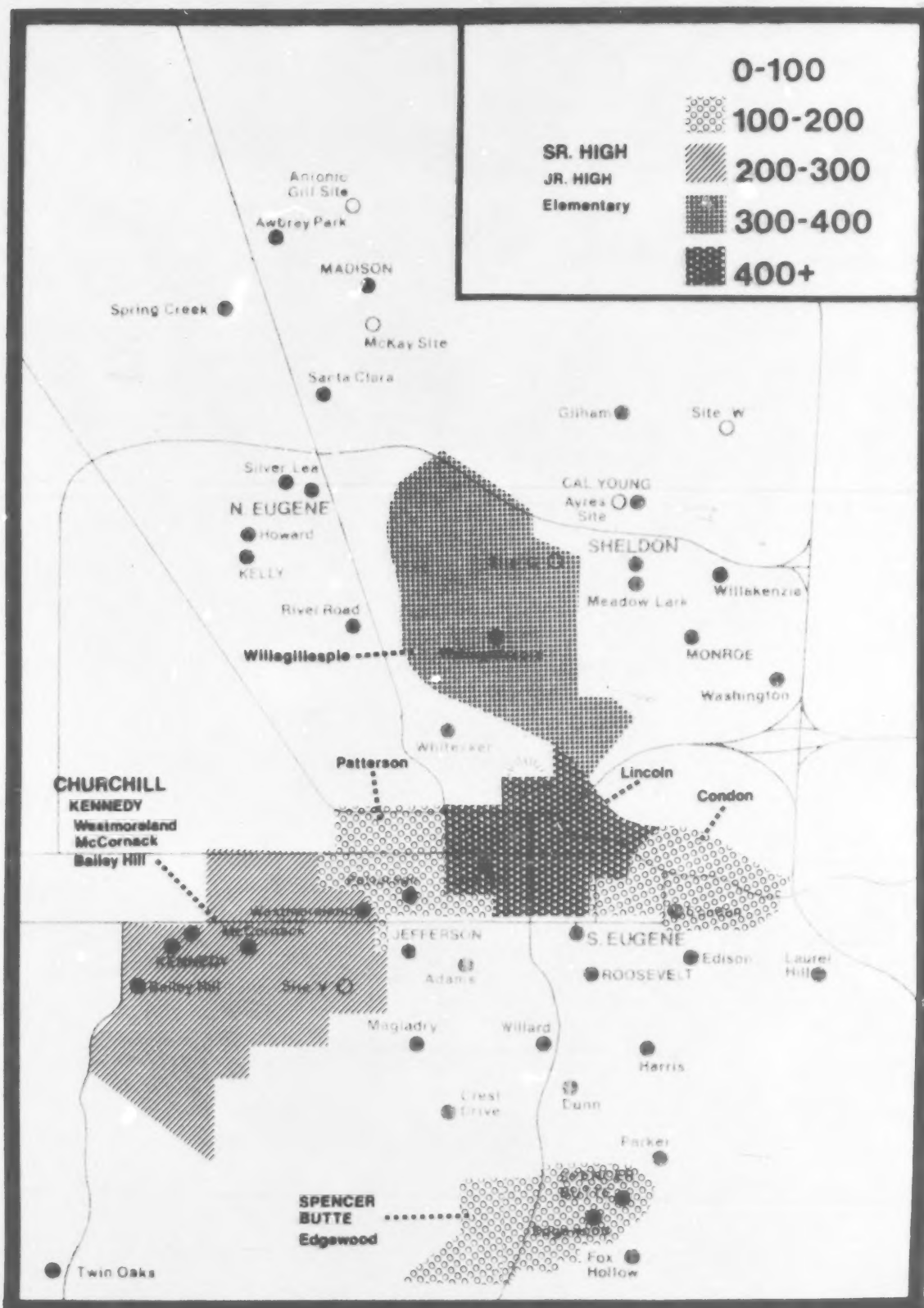


FIGURE 8 BUILDING PERMITS FOR MULTI-FAMILY UNITS BY ATTENDANCE AREA SINCE 1976

Figure 8 shows the spatial distribution of multi-family unit building permit activity for the period 1976 to 1978. Interestingly, considerably more activity is evident in central neighborhoods than was the case when only single family units were considered. The single largest number of multi-family building permits were issued in the central Lincoln attendance area (480). One hundred or more such permits were issued in three other central neighborhoods, namely Whiteaker, Patterson, and Condon. If the demand of young families for housing shifts toward multi-family housing, the fairly considerable development of multi-family units in central areas could boost enrollments here significantly. There is also, however, considerable multi-family building permit activity in some peripheral areas. Willagillespie, with 391 permits, is second only to Lincoln. The three attendance areas at the western periphery of the city: Bailey Hill, McCornack, and Westmoreland, all have more than 200 multi-family permits. Very few multi-family permits have been issued in the South Region except in the Edgewood attendance area, with more than 100. In summary, most new multi-family building activity appears to be focused in central neighborhoods and West Eugene. Considerable multi-family activity is also occurring in the Willagillespie attendance area.

New development application data

Since January 1976, School District 4J has systematically collected records of new development applications within the district's boundaries (minor partition records are not kept). This data provides useful indications of those attendance areas within which considerable residential development is likely within the next one to three years. Development application data should, however, be treated with considerable care. The fact that residential development has been proposed does not mean that such development will materialize. The use of development proposal data to project short term development (1-3 years) and its impact on schools, depends on assumptions that proposals will be approved, built, and occupied. The time frame associated with each of these phases will depend among other things on the professionalism and skill of the developers submitting the proposals, the total number of proposals being processed, the efficiency and skill of building contractors, and the nature of housing market.

An analysis of the school district development application data shows that less than 40 percent of all applications in 1976 had received final approval by April, 1979. Less than 20 percent of the proposals have been built and occupied. More than 50 percent of the proposals were still involved in the application process or had at least not been withdrawn from it.

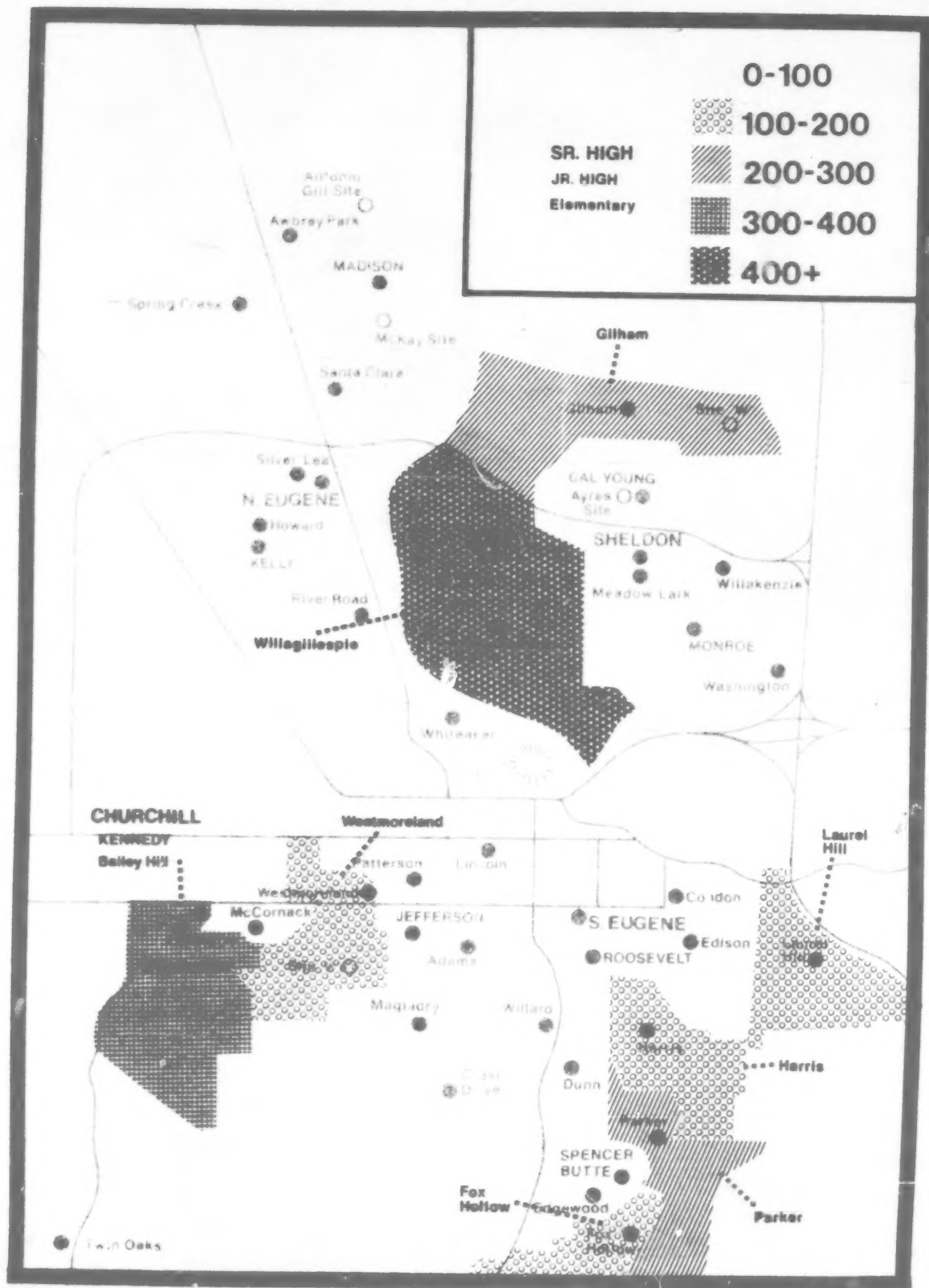


FIGURE 9 DEVELOPMENT PROPOSAL APPLICATIONS FOR SINGLE FAMILY UNITS SINCE 1977

In spite of these limitations, residential development application data is still the best indicator of where new residential development is likely to occur. Figure 9 shows those attendance areas where single family residential development proposal applications have been received between August, 1977 and April, 1979. The total of 600 single family units proposed in Willagillespie is nearly twice that of the next ranking attendance area, Bailey Hill (339). More than 200 single family units have been proposed in the Gilham and Parker attendance areas. Significant amounts of single family housing has also been proposed in Laurel Hill, Harris, Fox Hollow, Crest Drive, Westmoreland, Willakenzie, and Twin Oaks attendance areas. Notably, all of the above mentioned attendance areas except Twin Oaks are located near the edge of the city of Eugene.

Figure 10 shows the distribution of multi-family unit proposals. Two aspects of this data are particularly striking. First, virtually no multi-family development has been proposed in central city attendance areas. One reason for this may be that much of the new multi-family housing in central areas involves conversion of large older homes into multi-family units. Such changes would not show up in our application data. Nonetheless, the data do show that no large-scale multi-family residential projects have been proposed in central areas. The second striking aspect of the multi-family unit data is the extremely large number of such units proposed in the Willagillespie attendance area (2,415). Seven times as many multi-family units are proposed in this attendance area than in McCornack, the nearest competitor (264 multi-family units). Other areas in which significant amounts of multi-family housing have been proposed include Bailey Hill (93 units), Westmoreland (108 units), and Gilham (75 units).

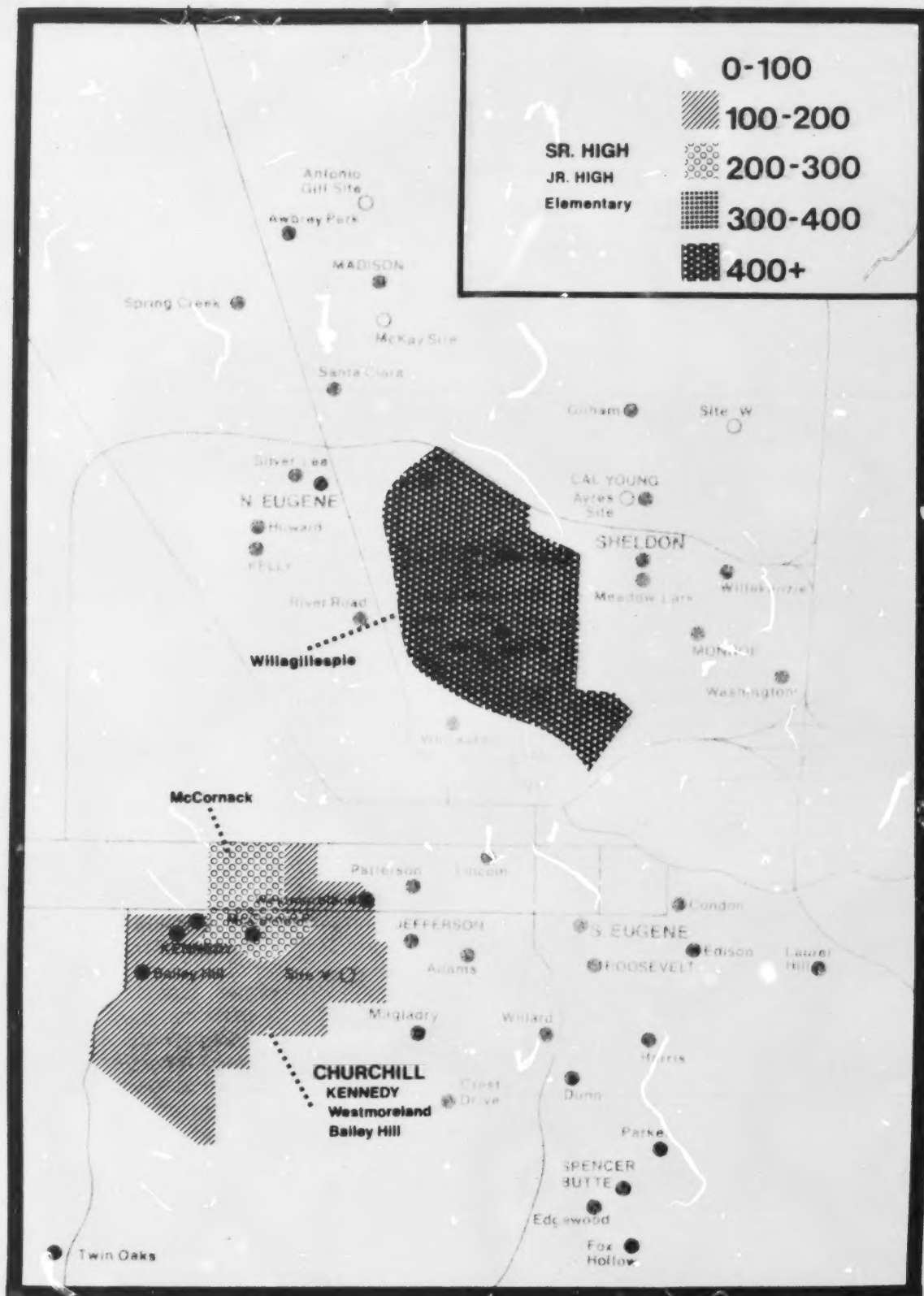


FIGURE 10 DEVELOPMENT PROPOSAL APPLICATIONS FOR MULTI-FAMILY UNITS SINCE 1977

Conclusions

If new residential development is closely related to enrollments in local schools, then the following schools are likely to experience enrollment pressures in the next 1-5 years:

Willagillespie

Gilham

Bailey Hill

Other schools at which increases in enrollments can be expected include Ellis Parker, Fox Hollow, Cres: Drive, Laurel Hill, Harris, and Willakenzie.

The tremendous amount of development activity in the Willagillespie area warrants more detailed attention and a separate section is devoted to it in Chapter Eight, Special Issues.

While the building permit data show that considerable multi-family development has occurred in central city areas since 1976, the application data show that no large scale developments are proposed here. Furthermore, very little new single family housing has been built or proposed here. The implications are that declining enrollments in these schools will not be boosted by new development.

The building permit data show that very little residential development has been taking place in the rural Lane County portions of School District 4J since 1976. Development proposal data, however, indicates that this trend may be changing. Some 165 single family units have been proposed in the Twin Oaks Elementary attendance area since August, 1977. The nature and magnitude of residential development in the county will depend to a large extent on the political resolution of the conflict concerning the way in which county land should be used.

While the development activity used in this section helps pinpoint those areas now experiencing rapid residential growth, all district attendance areas are subject to unanticipated high density or large scale development within relatively short time periods. This rapid development usually occurs in two ways: 1) through Planned Unit Development (PUD) of land already zoned for residential use. The Goodpasture Island PUD in the Willagillespie attendance is a good example. This PUD has the potential to produce as many 2562 multi-family units in a relatively short period of time.

Development: Long Term

In June 1978, School District 4J received funding from the National Institute of Education (NIE) to develop methodologies for forecasting enrollments for small areas. The methodology that has been developed for long term projections involves the use of land use variables to predict enrollment trends for elementary schools by 1990. The methods used are considerably more sophisticated than those used in the 1977 Facilities

Siting report and are described in this section. The results of the application of this methodology to Eugene schools are also reported.

The Method

In the 1977 Facilities Siting Report and Recommendations, an attempt was made to project the long term impact of residential development by estimating the number of school-age children that could be generated by the development of all vacant land zoned for residential use within each attendance area by 1990. While this method does allow a gross estimation of potential demand for school services in each attendance area, it does not allow any prediction of the impact of such development on school enrollments for two reasons. First, residential development takes place over time and, consequently, the impact of such development is not felt simultaneously at any one point. As new residential projects are completed and occupied, new pupils will appear in the schools. However, as time passes, these children will move through and out of the schools. Over a 20-year period, several generations of elementary school pupils will move through the schools. Consequently, simple estimation of the number of children that could be generated if all vacant land in an attendance area were developed, is not particularly useful unless there is some indication of the way in which this development will be phased over time.

The second problem concerns changes that may take place in the occupancy and family characteristics of the existing housing stock in the attendance area. Neighborhood maturation is one such change and it is probable that housing stocks that currently produces many children will not do so 20 years into the future. The theory of neighborhood maturation and neighborhood dynamics were discussed in a preceeding chapter and are not belabored here. Nonetheless, it is clear that in projecting long-term impacts of residential development on school enrollments, we need to develop a tool which takes into account the phasing of new development and neighborhood change. The members of the NIE grant team¹ have developed a tool which goes a long way toward meeting these requirements.

The first step in this method is to analyze historical enrollment data and to identify existing trends in enrollment. Declining or increasing enrollment is defined in terms of an upward or downward linear trend. The second step is to link enrollment trends to neighborhood characteristics. This is achieved by attempting to explain changes in historical enrollments by changes in certain land use characteristics of the neighborhood. A number of land use variables were included in the study. The method used to determine which of the land use variables were the most important was step-wise regression. This technique allows variables to be introduced sequentially so that the relative importance of each can be determined.

¹Members of this team are James Carlson and Bob Swank of Lane Council of Governments.

Interestingly, two variables which are measures of neighborhood maturation emerged as the most important variables in explaining enrollment changes. The two variables that explained a considerable portion of the variation in enrollment are:

1. Percent of single family homes built in the last 7 years
2. Percent of single family homes built 7 to 17 years previously

This indicates that neighborhood maturation does indeed influence on the trend in enrollment. The results show that if there is a high proportion of new (1 to 7 years old) single family units, there is a positive impact on enrollment trends. If there is a high percentage of single family units built 7 to 17 years earlier, the trend in enrollment is impacted negatively.

Once the best set of explanatory variables have been determined, it is necessary to project values of them for the planning period of interest. This is where an understanding of the land use planning process for Eugene-Springfield metropolitan area is essential. The 1990 Plan, which is currently being updated, designates the areas which are expected to have low, medium, or high residential development. The amount of vacant undeveloped land in each density category for each attendance area can then be determined. From this data, it is possible to determine the total number of new dwelling units that can be expected if all of the vacant land zones for residential use is developed by 1990. As pointed out above, not all of this vacant land will be developed simultaneously but will be phased over time. To deal with this problem, the research team assumed that all vacant land within the current city limits will be developed within the next six years and all other land designated for residential use in the current plan by 1990. This is not an unreasonable assumption because local planners consciously try to keep a six-year supply of land within the city limits. When part of the supply is used up, additional land is annexed to the city. This allows the projection of the age of structures in each neighborhood in 1990 as well as the total number and density. These projections can now be used to estimate the enrollment trends in each attendance area by 1990.

A summary of the process described above is appropriate here. First, a relationship between enrollment and certain land use characteristics of each attendance area is determined. Second, values of these variables are projected for 1990. Finally, the projected land use variables are used to predict enrollment trends in 1990.

Limitations and Assumptions

A number of assumptions are made in using the methodology described above. Perhaps the most significant assumption is that the relationship between the land use variables and enrollment will remain constant through time. While the percent of single family homes built 1 to 7 years ago is a variable that explains much of the variation in enrollment in attendance areas now, it is possible that substantial shifts in the demand for housing

might result in a much lower explanatory power in the future. If, for example, the demand of households with children shifts significantly away from single family homes to multi-family homes, then the ability of the single family unit age variable to predict enrollments will be seriously affected. While there is evidence that the demand for housing will shift toward multi-family homes, there is little evidence to suggest that young families will demand less single family housing. Family demand for single family housing is closely related to demand for space associated with additions to family size.

A second limitation refers to the inability of the method to account for changes in the family characteristics of older neighborhoods. If one ascribes to the theory of sequent occupance, which is described in a preceeding chapter, then major changes can occur in older neighborhoods. The NIE long-term projection method is not able to predict such changes. However, there is little evidence that sequent occupance is a viable concept in Eugene. Enrollment in older neighborhoods in Eugene have continued to decline systematically since the 1960's with little evidence of any upswing. However, changes in the housing market may make homes in older neighborhoods more attractive to young families. If this occurs, the long-term enrollment trend projections reported in the section that follows will be off the mark.

A third limitation is the assumption that vacant residentially zoned land will be developed at equal rates in all parts of the district. Clearly, a six-year supply of land in some attendance areas may be developed within three years, while in others similar development could take ten years. Differences in the rate of development will depend on a number of factors including the idiosyncrasies of the housing market and the very political approval process. The methodology is, however, designed to provide general indications of where enrollment problems in the district may be felt. It is possible to refine the projections for individual attendance areas by using additional information about development possibilities. In the River Road/Santa Clara area, for example, it is probable that the septic tank problem will be solved only within the next 2 to 4 years. This means no new residential development here for a while and projection of land use variables should be adjusted accordingly.

The major strength of the method is that the land use variables used to predict enrollment trends can be related to the theory of neighborhood maturation. This provides the method with a strong theoretical foundation. Furthermore, the empirical evidence strongly suggests that neighborhood maturation is the most relevant of the neighborhood theories in Eugene. The method is a major improvement on the crude techniques formerly employed to project long term impacts of residential development. Intelligent use of the technique should contribute markedly to our facilities planning ability.

Results

The results of this methodology are presented in a non-technical form in this chapter. Appendix A contains a statistical description of the results.

The following schools are projected to have increasing enrollment in 1990 as shown on Map 17.

Awbrey Park
Fox Hollow
Gilham
Howard
River Road

Santa Clara
Willakenzie
Laurel Hill
Spring Creek
Parker

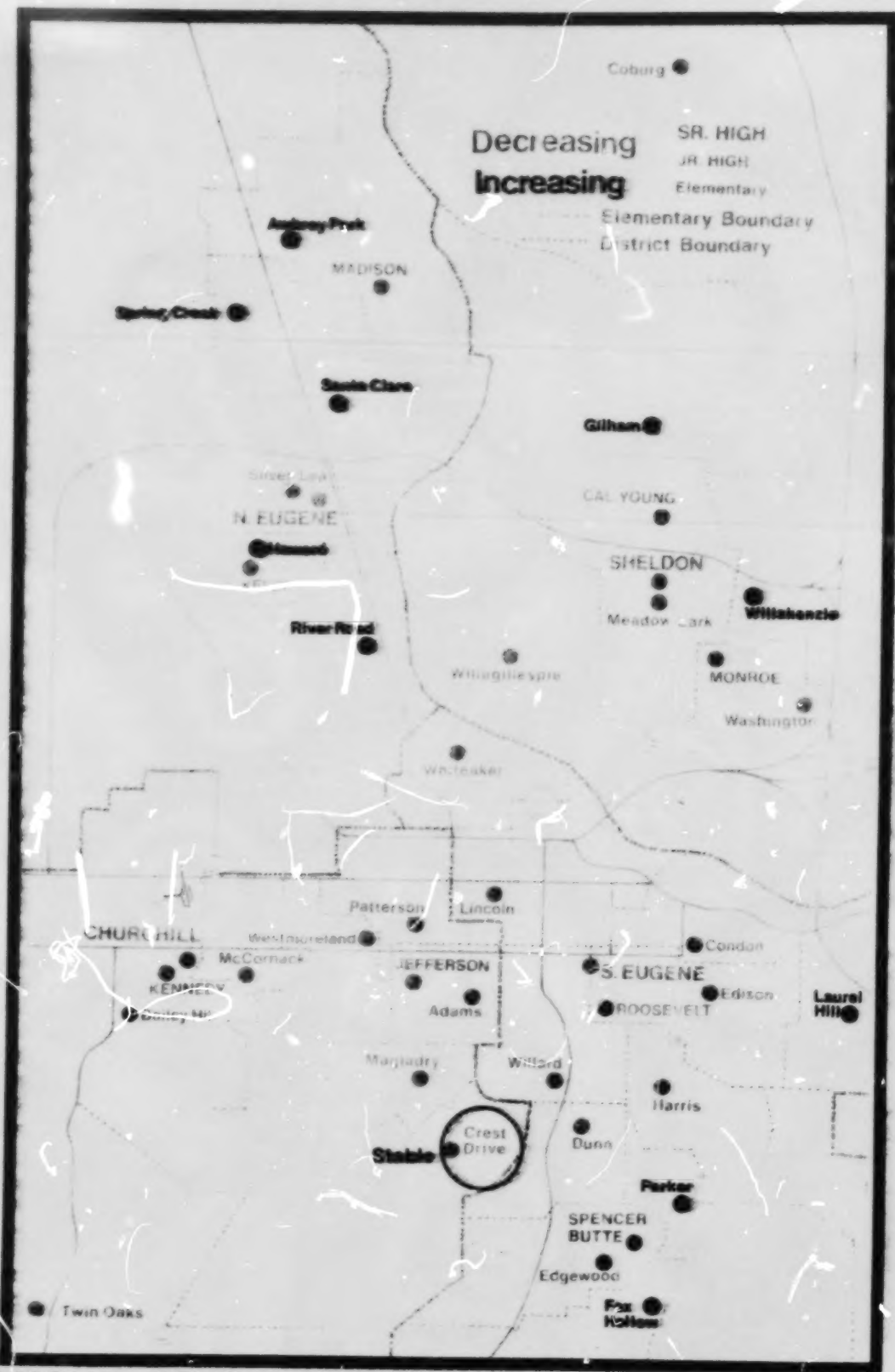
Declining enrollment trends in 1990 are projected in the following schools:

Bailey Hill
McCornack
Magladry
Edison
Meadowlark
Willagillespie

Whiteaker
Adams
Westmoreland
Harris
Patterson
Willard

Dunn
Condon
Lincoln
Edgewood
Washington

Crest Drive is expected to have a stable enrollment trend.



MAP 17 SCHOOLS PROJECTED FOR INCREASING AND DECREASING ENROLLMENTS IN 1990

The following schools currently have increasing enrollments but have declining enrollment projected for 1990:

Bailey Hill
Magladry

McCornack
Condon

All of these schools, except Condon, are on the southwest fringe of Eugene where residential growth is currently occurring. The declining enrollments projected for 1990 at Bailey Hill is a surprising finding. The projected trends do have policy implications. First, the building of a new school in west Eugene is not advisable in spite of burgeoning enrollments in peripheral schools there. Portable classrooms may be a way of alleviating short term enrollment pressures.

Interestingly, a number of schools currently experiencing declining enrollments, have increasing enrollments projected for 1990. These schools are:

Gilham
Fox Hollow
Howard
River Road
Santa Clara

Willakenzie
Laurel Hill
Spring Creek
Parker

Fox Hollow, Gilham, Willagilespie, Parker, and Laurel Hill are all peripheral schools with large amounts of vacant land within their attendance boundaries. If developed in accordance with the 1990 plan, an upswing in enrollment can be expected in these attendance areas. Howard, River Road, Santa Clara, and Spring Creek are all River Road schools. The increasing enrollment trends projected for these schools obviously depend on the lifting of the building moratorium in the area. The general expectation among local planners is that it will be lifted. The policy implications of these enrollment trend projections are significant. All of the schools listed, with the exception of Fox Hollow and Gilham, currently have enrollments well below program capacity. As ample space is available in these schools, enrollment increases can probably be accommodated. Fox Hollow and Gilham may well prove to be problem areas. These schools are currently approaching program capacity and it is for these schools that the most pronounced enrollment increase trends are projected by 1990. The school board may have to weigh the costs of building new schools in these areas against the costs of other methods such as busing. The new school construction vs. busing trade off is discussed more specifically in sections dealing with options for balancing enrollment.

Table 5 shows schools which are currently declining and for which declining enrollments are projected for 1990. In some cases, the trend has worsened while in other cases, the situation has improved. Table 6 makes this distinction. Continued decline raises probably the most thorny issue that the district is likely to face in the next decade - the problem of school closure.

Table 5

Currently Declining Schools
With Further Decline Projected for 1990

Projected Decline Worse Than Current Decline	Current Decline Worse Than Projected Decline
Edison	Adams
Edgewood	Meadowlark
Patterson	Washington
Willagillespie	Willard
Whiteaker	Dunn
Westmoreland	Silver Lea
Lincoln	
Harris	

Schools for which marked further enrollment declines are projected are: Patterson, Whiteaker, Westmoreland and Harris. The student housing project at Westmoreland could serve to stabilize enrollments there. However, the decline projected for Patterson, Whiteaker, and Harris is cause for concern. The continued decline projected for Dunn, Meadow Lark, and Lincoln could also create major problems. While these projections are cause for concern, it should be remembered that the methodology is less useful for predicting enrollments in older neighborhoods than in newer neighborhoods. This is because older neighborhoods have little vacant land for new residential development and increases in enrollments due to neighborhood conversion or change cannot be predicted using this method. The point is that if the percent of single family homes built 1 to 7 years ago is used as the basis for projecting enrollment increases, then it is virtually axiomatic that these projections will show older neighborhoods with little vacant land with declining enrollments in 1990. In a previous chapter we pointed out that we know very little about what happens to enrollments in a neighborhood after it has matured.

The projected 1990 declining enrollment trend for Willagillespie is interesting in that it shows up the limitations of using long term (10 to 15 year projections) without projections for intermediate years. Development application data in this attendance area indicate that there will be large scale residential development here in the next 1 to 3 years which could significantly boost enrollments. By 1990, however, most vacant land for residential development will have been used up and the effects of maturation will probably be felt. The long term projection methodology does have the potential to provide such intermediate projections. The methodology is still in the process of being refined and the results here should be regarded as rough. It should also be noted that the projections described in this section made use of existing 1990 residential land use designations. As described in an earlier section, the 1990 plan is currently being updated and these designations are likely to change. We recommend that the methodology be applied again when the update is completed. Intermediate projections for 1985 will also be very useful for facilities planning.

CHAPTER VII
OPTIONS FOR
BALANCING
ENROLLMENTS

CHAPTER VII

OPTIONS FOR BALANCING ENROLLMENTS

Declining enrollments and the capacity dilemma have been presented as two separate but interrelated problems. The overall decline in the number of students reduces the total revenue of the district and cost per pupil goes up. The locational mismatch between students and schools results in the financially inefficient operation of schools with low enrollments, while crowded conditions exist in schools in areas of intense residential development. The disparity in student enrollments creates unequal educational opportunities and use of facilities.

Decisions concerning the use of excess school space or whether to close under-capacity schools will have to be evaluated in light of the crowded conditions elsewhere in the district and the value of a neighborhood school. Similarly, the cost of expanding capacity in existing schools must be compared with the transportation costs of busing students to other schools.

Measures implemented to cushion the effects of declining enrollments should be flexible enough to be modified as changes occur in future enrollment patterns. Both the Bureau of Census and 4J Research Specialist Charles Stephens project that the trend of declining enrollments will reverse itself after the mid-1980's. The location of these students will directly influence the provision of school services. Therefore, it is imperative that the district not only address the current capacity dilemma, but also closely monitor future residential development, population migration patterns, and neighborhood maturation in order to coordinate school policies.

The following section is divided into two parts. First, the various options which can be used to balance enrollments within the district will be reviewed. This will include transporting students within the district; expanding existing facilities, and the use of excess space in schools. The second portion will address ways in which the school district can take a more active role in directing future residential growth.

Within District Options

Busing:

The most obvious and immediate solution to the disparity in enrollments is to bus students from crowded schools to schools where excess space is available. A limited amount of busing is already proceeding successfully in Eugene. Because of overcrowding, students residing in the Edgewood School attendance area are being bused to Dunn School. In addition, kindergarten children are bused from Awbrey Park to River Road. Additional students in the Bailey Hill and Willagillespie Elementary attendance areas, as well as Kennedy Junior High, will probably have to be bused as these schools are over 100% capacity.

A survey of new housing conducted by 4J in summer of 1978 revealed that Eugene residents were not opposed to having their children bused. However, transporting students to schools with excess capacity may become an increasingly expensive option. Transportation costs include both the escalating cost of fuel and maintenance of the buses. More stringent safety requirements on the design and operation of school buses have raised the price of new vehicles well beyond the basic inflation rate and have demanded expensive retrofitting of buses currently in the fleet. Transportation costs must be taken into consideration in designing economically feasible alternatives to balance enrollments among schools.

Expansion of program capacity in existing schools

Enrollment in District 4J schools is defined as a percentage of program capacity. This is a narrow definition of capacity which sets an upper limit of 25 students per classroom and recognizes reduced capacities for special education programs. Other definitions of school capacity could include a greater number of students.

In-building reorganization

In terms of short range solutions, the simplest approach to expanding program capacity is to readjust the proportion of ancillary space and educational space. For example, classrooms utilized for music rooms, reading labs, or storage could be converted back to regular classroom use. The obvious disadvantage to this is the loss of special programs which may reduce the quality of the education experience.

Portable

Expansion of physical facilities to increase program capacity can be accomplished by the use of portable units or permanent structural additions. Construction of eight permanent classroom plus six portables at Bailey Hill Elementary school increased its capacity from 383 to 450 students. The program capacity at Willagillespie Elementary school increased from 375 to 450 during 1979 from the construction of five classrooms. According to the district Building and Maintenance Division, all schools except Whiteaker, Lincoln, and Magladry could be expanded and still comply with the city, county, and state standards.

The portable classrooms has been introduced as the low-cost, temporary solution to local enrollment pressure. Portables allow the school district to increase the capacity of a traditional building on relatively short notice. Their portable nature gives them a desirable flexibility and they can be placed and relocated as the need arises. Portable classrooms are currently being used at the following district schools: Awbrey Park (2); Spring Creek (2); Madison (6); Gilham (2); Washington (3); Bailey Hill (3); McCornack (3); Crest Drive (2); Magladry (1); Kennedy (1); Roosevelt (1); and Churchill (2).

However, the use of portables is constrained by a variety of drawbacks. First, they require additional expense which may be difficult to justify in the light of declining enrollments and rising property taxes. The costs of portables, not including site preparation, installation, or utility connection, is estimated to be in the range of \$35,000 to \$40,000.¹ Second, they may be viewed as a stop-gap or second class measure and be associated with "an undesirable sense of impermanence". Third, portables will consume outdoor space devoted to other uses (i.e., recreation, athletics). Fourth, portables may not eliminate the need for busing if growth is occurring in a previously undeveloped area not served by schools. Installation of portables at schools located at the periphery will shorten the distance that transporting students to emptier, centrally located schools would entail. And fifth, the cost to move a portable is currently approximately \$3,000.² This is an increase of approximately 20% in a single year. These costs will also continue to increase with inflation. The costs of portables should, therefore be analyzed both in terms of the costs of the units relative to the costs of other ways of providing school services.

Half day shifting

Program capacity can be doubled by half day shifting. It would only be necessary to place the overcrowded schools on double sessions. Some standard criteria should be established to determine the point when burgeoning enrollment in a school attendance area would require this measure. Pressing a school into double service will create major reorganizational problems for children, parents, and staff. A recent report (Byrne, 1979) viewed this as a tacit admission of poor planning and quoted Kipling, "pressed into service means pressed out of shape." Parents may view double sessions as an unequal educational opportunity and an unfair allocation of school space.

¹ Estimate in 1979 dollars from the District 4J Business Office, Earl Strand, 6/29/79

² Estimate in 1979 dollars from the District 4J Business Office, Earl Strand, 11/14/79

New school construction

Substantial residential development in an area not previously served by a school could precipitate the need to construct a new school. Monitoring development proposals and land use policies of the city will give an indication of the extent and location of future residential development. Goodpasture Island and Willakenzie Island annexations are prime areas for future housing development. During the period 1977-79, a mixture of 3,196 single family, attached condominiums, and apartment units were proposed for the Goodpasture Island area. If developed, these units could house enough children to fill a school the size of Edison Elementary. The recently annexed Willakenzie Island areas, include substantial vacant acreage zoned for single family, multi-family, and garden apartments, located within the same elementary attendance area as Goodpasture Island. If these areas are developed simultaneously, Willagillespie school will be able to accommodate only a fraction of the students within its attendance area. The cost of busing hundreds of children across the district for several years may exceed the cost of constructing a new school facility in the Goodpasture Island area.

School district thinking on this matter has in recent years been dominated by a "no new school construction until enrollments increase" philosophy. This mentality is reflected in the school board's recent decision not to buy a site on Goodpasture Island in spite of strong indications that this area will be residentially developed. With enrollments declining alarmingly in central schools, it appears sensible to bus children from crowded peripheral schools to schools where space is available. In this way children in peripheral areas are provided with school services and there is no need to close central schools because of enrollment decline. But as Byrne (1979) points out, there are reasons to believe that it is more costly, on purely economic grounds, to bus children than build a new school. When relatively reliable projections of the number of children likely to be generated by new residential development are available, then the costs of busing these children can be estimated. Likewise, the costs of new school construction can be estimated by considering costs of land, materials, labor, and financing. If the projected costs of busing exceed the projected costs of new school construction, then building a new school is justified. The application of such a cost analysis is discussed in greater detail in the chapter dealing with special issues. The findings of the analysis suggest that construction is cheaper than busing largely because new construction is less affected by inflation. This is true because of the financing arrangement that are available. For example, a school district can levy a bond, and repay it over a certain time period at fixed interest rate (say 6%). Busing, on the other hand, is at the mercy of spiraling inflation. Gasoline, vehicles, drivers, and maintenance costs are likely to increase at a faster rate than the costs of financing school buildings. Furthermore, a school building and the land on which it rests are tangible capital assets. Busing, on the other hand, provides no such assets except perhaps a fleet of worn out buses.

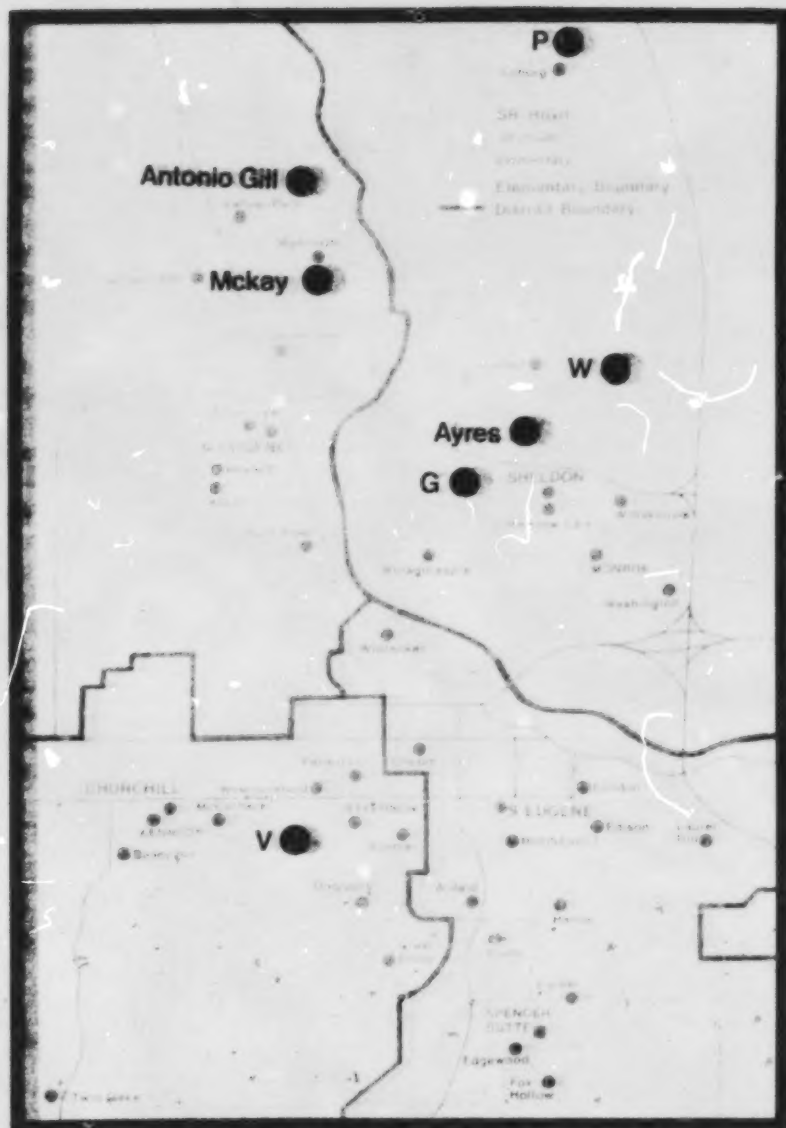
There are, of course, other reasons why the school district may be concerned with the construction of new schools in the not too distant future. Continued in-migration and increased births may lead to overall increases in enrollment necessitating school construction. The school district currently possesses a number of sites that could be used if demand is sufficient to warrant the building of a school. These sites are listed below:

<u>Undeveloped Sites</u>	<u>Region</u>	<u>Map and Tax Lot</u>
Ayres Site (presently Cal Young open space)	Sheldon	17-03-17-31-1900
Antonio Gill Site	North	17-04-01-20-1000
McKay Site	North	17-04-12-20-1000
Site "G" (Bond Lane)	Sheldon	17-03-19-10-1401 -1601 -1901
Site "P" (Coburg)	Sheldon	16-03-20-00-200 16-03-21
Site "V" (Garfield St.)	Churchill	18-04-01-32-2301 -2401 -2500 -2600 -2701
Site "W"	Sheldon	17-03-16-00-2200

Map 18 shows the location of these sites. Some of the sites are well located with respect to planned residential growth while others are not.

Ayres site:

This site is currently Cal Young vacant land. Should Gilham Elementary become overcrowded, a school could be built on this site. Attendance area boundaries could be adjusted so that Gilham serves the area to the north of current city limits which is targeted for residential growth in the 1990 Plan update.



MAP 18 UNDEVELOPED SCHOOL SITES

Antonio Gill Site:

This site is ideally located to deal with both existing and planned 1980 residential development. The site is located to the north of Awbrey Park Elementary school which is currently experiencing enrollment pressures despite the ban on building here. If the moratoria prohibiting development are lifted, substantial residential growth is expected here. Like the McKay site, however, the Antonio Gill site is located on a floodplain which will increase the costs of school construction.

McKay site:

This site is not well located with respect to expected residential growth. It is located on the anticipated urban service boundary and much of its hinterland is not targeted for residential growth. Furthermore, the site is located on a flood plain which would make school construction expensive. A school could be built here, however, to provide services to pupils from the Santa Clara and Awbrey Park attendance areas should these schools become overcrowded. Nonetheless, the school district should consider selling this site as it is unlikely to serve as a focus for residential growth.

Site "G" (Bond Lane):

The Bond Lane site is located in the Willagillespie attendance area where a substantial amount of residential development has been proposed. The site is, however, not well located to provide services to the area to the west of Delta Highway, known as Goodpasture Island. Many major residential projects have recently been proposed for Goodpasture Island. The district may be well advised to acquire a site here and this possibility is dealt with in more detail in the section dealing with special issues. One option, however, is for the district to trade its Bond Lane site for one in Goodpasture Island. Five new classrooms have been built at Willagillespie Elementary school, and this expansion should be sufficient to accommodate children produced by residential development in other parts of the Willagillespie attendance area.

Site "P" (Coburg):

Site "P" is located less than a mile to the north of the existing Coburg Elementary school. Enrollments at this school have declined steadily in recent years. Although the population of Coburg has been growing at a rate of 2.6% since 1972, population increases between 1975 to 2000 ranges from a "low" 350 people to a "high" 800 people.* It is unlikely, therefore, that a new school will be required here. Should development take place at a more rapid rate than expected, however, the site is well located with respect to expected location of residential growth.

* Benkendorf & Associates, Comprehensive Plan Report, Coburg, Oregon, 8/79

Site "V" (Garfield Street):

This site, to the south of Westmoreland Elementary, appears to be well located to provide services to a large area in southwest Eugene currently targeted for residential growth by the 1990 Plan Update. However, the actual pattern of development could affect the ultimate usefulness of this site. The 1990 Plan diagram designates low density growth to extend into the ridgeline in ridgeline areas supporting higher income housing and the Bailey Hill area supporting medium income housing. Should this be the case, it is likely that the growth will have positive impacts on the enrollments in the Magladry and Westmoreland areas, but not be large enough to warrant the development of Site "V." The school district, in this case, may wish to acquire a site further west. This site may also be one which the school district will eventually wish to consider trading for a better located site.

Site "W":

Site "W" is very well located with respect to anticipated residential growth. The 1990 Plan staff have targeted large parcels of land in the vicinity of this site for residential development. The site is within one mile of Gilham Elementary school, but is separated by Coburg Road which would provide a natural attendance area boundary. The site is also relatively well located to provide services for children in Willakenzie attendance area, should the local school be inundated because of recent annexations there.

Boundary changes

Boundary changes among attendance areas within the district may balance the enrollments as the student population ages and shifts. If boundaries can be altered so that students in overcrowded schools can be moved to underpopulated schools, space will be used more efficiently and no programs will be cut. However, there are two major limitations on the effectiveness of changing attendance boundaries. One is that enrollment is under capacity for the district as a whole. No matter where boundaries are drawn, there are not enough students to fill all the schools. In addition, changing boundaries is likely to result in increasing the number of students that need to be bused and transportation costs are high.

Nonetheless, there is evidence that limited boundary changes are somewhat effective. The previous Facility Siting Report (1977) suggested boundary changes between Churchill and South Regions; and between selected elementary schools in all four regions. The combination of development activity and enrollment pressures in the Bailey Hill, as well as McCornack areas, resulted in the need for a boundary change between the two schools in 1978-79. The one boundary change made in the Sheldon Region clarifies the attendance area between Monroe and Cal Young Junior High schools in the Spyglass area. The entire Spyglass development is now included within the Cal Young attendance area.

A review of development activity, conducted in February, 1979*, concluded that no boundary changes were anticipated in the North Region, and only minor adjustments required in the South and Churchill Regions. The Sheldon Region, due to a disproportionate share of development activity, is anticipated to require a study of relatively major changes in attendance boundaries.

Utilization of excess space

The school district, seeking to maintain a neighborhood school with low enrollments, may look for financially feasible ways of utilizing the excess space.

Improve Programs

The simplest, but most expensive way to utilize excess space is to improve programs. Schools with declining enrollments have converted classrooms for use as reading labs, music rooms, and special art and drama programs. However, using classrooms for special purposes does not benefit all schools and students equally.

Establish magnet programs

A more equitable and efficient use of excess space is to establish magnet programs. These attract students from throughout the district to the low enrollment school. The special programs, accessible to all district students, increase the educational options. A successful example of this is the Magnet Arts program at Condon which draws over 30 percent of its students from other attendance areas. The 1977 Facility Siting Report recommended encouraging additional magnet programs.

Internal building reorganization may result in rearranging the location of surplus space within a school. The alternative schools at Adams, Edison, and Silver Lea operate as "schools within a school." The community schools at Lincoln and Whiteaker lease their excess space for activities ranging from boy scouts to community volleyball. Income from these leases is contributed to the district revenues. At present, the cost of administering these programs exceeds income from leasing. The feasibility of expanding the community schools program to a profitable venture merits investigation. Any additional plans to lease classroom space must be integrated with this program.

* See: Summary of Attendance Area Boundary Shifts for School District 4J, prepared by Rose Hesse, February, 1979.

Reorganization of grade structure

Reorganization of grade structure is possible when some grades in a neighborhood are over capacity while others are under capacity. For example, it may be possible to close one regional junior high school and transfer all of that region's ninth graders to a regional four-year high school. This would, in effect, bring the high school and junior high schools up to capacity and empty one junior high school. The empty buildings may then be sold, leased, or mothballed.

School closure

Redistribution of students through busing, grade reorganization, or boundary changes may make it possible to close a school building. Severely declining enrollments in schools located in neighborhoods being converted from residential to commercial uses, may make it more economical in the long run to close a school. If financially feasible ways cannot be found to use excess space, a grossly underused building will likely incur operating costs which exceed its worth to the district. School closure may make good sense from a financial, educational, and organizational point of view.

Yet, closing a school is one of the most politically and emotionally sensitive actions a school board can take, due to gut level opposition from the community. "Almost everyone agrees that school closure ought to be a last resort for a school district," (Mazzarella and Barber, 1978, p.45). The decision to close a school must be based on a sound data base and positive alleviations with the neighborhood being served. An extensive analysis of housing and land use patterns in the neighborhood, enrollment projections, demographic trends, and the effect of neighborhood maturation and mobility are required to provide an indication of the long range effects of school closure. This is, of course, in addition to a cost/benefit analysis between the costs of operating the school and other alternatives of providing school service.

While closing a school is a possible option, the decision will be based on a specific detailed investigation, and must be accompanied by good communications with the community as stated in Barber's (1978) study.

"The solutions to problems created by declining enrollment do not make school boards and administrators popular with staff and community. Reduction in force, school closure, and cost cutting programs often engender violent reactions from everyone. If the public is to understand the enormity of the problems and the necessity of the solutions, it must be informed. Wide use of the media will be extremely important."

Leasing

Leasing part or all of a school building may prove to be a viable option if the district can find a client with compatible activities. It is desirable for the district to retain title to the building as a precaution against future increases in enrollment, while shifting the responsibility for maintenance to the tenant.

If the lessee is a private investor, the lease can provide the school district with a reliable income and simultaneously stimulate a project which might not have been economically feasible otherwise. The property remains publicly owned and is, therefore, not subject to periodic reassessment and raises in annual taxes. This may provide a sufficient margin of security for the investor to secure a loan (Thomas, 1979, p.16).

When the lessee is another public agency, the monthly payment may be waived in favor of some other mutually beneficial arrangement. For example, a city operated bus system could provide discount fares for commuting students, thus reducing transportation costs to the district, in exchange for the city's use of the school building as a community center.

Mothballing of underutilized school facility has not proven to be effective or lucrative in other communities. The combination of minimal maintenance, threshold utility costs and vandalism cause the building to deteriorate. The value of the property, for both the district or a potential buyer, diminishes as the cost of rehabilitating the building increase.

Selling school buildings

Sale of excess school buildings or inappropriately located sites is an option for the school board to consider, especially when there is need for improved or expanded facilities elsewhere in the district. The decision to sell, rather than to lease, removes concern for the building's maintenance or future reconversion to school use. The buildings which has become a liability to operate, becomes an asset when placed on the market.

The sale of buildings or property provides cash assets which can be reinvested where the need for schools is greater. This could be applied to school facilities in peripheral areas where intense residential development will create future enrollments.

To extract the maximum benefit from the sale of excess buildings, the district should be aware of the true market value and intangible amenities vested in these buildings. Schools located within residential areas in close proximity to downtown may be converted to multiple unit residences or office space. The building shell and existing utilities shorten the construction time which can be very attractive to a developer seeking to shorten interest costs and obtain faster occupancy. The yard space can be utilized as parking, required by ordinance for residential or commercial uses.

Options Involving School District Coordination with Local Development

The expansion of residential areas away from existing school facilities is the underlying cause of many of the district's "capacity dilemma" problems. The district has adopted an active role in redirecting residential growth. Rather than continually responding to demands for school service which created by and use decisions of local government, the school district has become an active participant in the urban development process. Input into land use decisions are most effective when efforts are coordinated between both the public and private sector.

Coordination with developers

The school district may influence the location of local development by asking developers to pursue construction in areas with sufficient school space. At the present time, realtors must advise potential buyers whether or not space will be available in the local neighborhood school. If the children must be bused to a school outside their neighborhood, the locational value of the development is "considerably diminished". Thus, developers may be responsive to cooperating with the school district if provided with sufficient information.

Development Information Packets for developers have been prepared, though not yet distributed, by the 4J Planning staff. These information packets include:

- how concentrations of development in some areas create severe problems for local schools;
- the amount of vacant land and children per unit in each attendance area;
- identification of areas where development would not overburden schools; and
- courses of action that the district may take if developers continue to disregard school services when locating development.

To date, notification that school space is not available has not altered the decision to proceed with construction. However, it does provide the school district the opportunity to establish its concern and identify itself as an active participant in land use decisions. Establishing a record of participation will be valuable if the district seeks legal standing to appeal land use decision or court challenges to growth management plans which are detrimental to the school district.

Land or fee dedication

Cities in other parts of the country have passed laws that require developers and home builders to contribute real estate or cash when new residential construction places an additional burden on the local schools. The justification for such action is based on the theory that the residents of a new development sometimes place a disproportionate cost on public service. (Essentially, this is the thinking behind the systems development charge recently instituted by the Eugene City Council.)

Land dedication legislation has most often been used in areas where school enrollments are growing along with the population of the city. Since this is not the case in District 4J, it would seem inappropriate to expect developers to dedicate parcels of land at this time. However, with schools on the periphery exceeding capacity and new residences being built further from existing schools, transportation costs will continue to increase.

It seems logical, then, that new residences with school children in houses on the periphery will require a greater proportional share of the district's transportation budget. On the other hand, residents of new homes that are within walking distance of existing schools with empty classrooms require proportionally less. A set of standards could be developed that would levy a fee (dedication) against new residential developments when: a) they fall in an attendance boundary where space is not available in the school, b) district-provided transportation will be required, and c) projections show that the projected dwelling type will generate "x" number of school children. A more precise definition of what constitutes a capacity problem would lend additional support to these standards.

In November 1972, District 4J attorneys studied the question of dedications and concluded that it is "legally feasible to consider new city ordinances requiring developers to dedicate land for school purposes or pay a fee in lieu of such dedication." Courts have upheld challenges to such ordinances if reasonable criteria exist indicating when dedications will be required, reasonable standards exist regarding the amount required, the need for additional facilities is attributable to the proposed development, and the dedicated land or money will be used for the benefit of the occupants of the new development.

A program to require payment of fees to offset increased transportation costs falls within guidelines laid down by the courts.

Pursuing this course of action would require the drafting of proposed city and county legislation. Supporting documents containing carefully prepared financial data would clearly be required. Board policies and planning documents would have to be reviewed and amended to be consistent with a dedication policy. A preliminary investigation of the legal feasibility of land or fee dedication was undertaken by RDE Planning staff in 1978. Additional study of this issue is scheduled to commence in Fall, 1979.

Coordination with City-County planning

Another way for 4J to help correct the problem of locational mismatch is to coordinate with the local planning agencies. Coordinating and sharing information on population, land use, prospective residential development and neighborhood maturation and migration will be mutually beneficial. Efforts should be made to inform the planning agencies of our data collection and to increase their awareness of how land use decisions impact upon school services. The district can influence the impact of local growth by reviewing and commenting on proposed residential developments and annexations within the city. This requires cooperation with the city as an understanding of their review procedures for proposed subdivisions, planned unit developments, and annexations.

Comprehensive land use plans, which govern the location of future residential development and establish policy regarding the role of the school in the community, should reflect the district's policies regarding provision of school services. This requires active participation of the district in the development and update of the metropolitan comprehensive plan.

This section will discuss how District 4J can provide effective input into the land use decision making process by:

- 1) establishing cooperative agreements with local government;
- 2) review of proposed residential developments; and
- 3) participation in the metropolitan plan update and other land use plans and policy making.

Measures which the district could adopt to strengthen its input into the process, namely the development of a District 4J Land Use Plan and endorsement of a land or fee dedication ordinance, are discussed in the subsequent section.

Cooperative agreements

Recent state legislation requires special districts, including School District 4J, to bring their land use activities into compliance with Land Conservation and Development Commission (LCDC) statewide goals and to coordinate these activities and land use programs with local governments. Failure to meet these requirements would mean that the district would lose its right to contest local government comprehensive plans. District 4J has taken a number of steps necessary to comply with state legislation. The district's land use activities have been examined for compliance with LCDC goals. The only aspect of these activities not found to be in compliance with LCDC goals is the District's ownership of school sites on a floodplain (see Appendix A). The district has agreed to change policy with regard to natural disasters and hazards by September of 1981.

The district has also established statements of agreement with the Lane Council of Governments (L-COG) and the City of Coburg. (See Appendix B). Negotiations for agreements with the City of Eugene and Lane County continue, but are not yet completed.

In recent meetings between the planning staffs of the city and District 4J, progress has been made toward insuring more effective input, particularly in the PUD review process. For example, the city has agreed to provide the district with more detailed referral information at the diagrammatic stage on which we may base our recommendations. The cooperation agreement would identify the best point in the review process for District 4J input and would formalize the current practice of district review of proposed residential developments and annexations within the city.

Review of residential development

The Planning staff currently reviews all proposed residential development and annexation requests submitted to the school district by city and county planning departments. The Planning Department in RD&F prepares referrals that assess the projected impact of the proposed development on District 4J schools. These 4J referrals are included in the staff notes that local government planners submit to the Planning Commission or City Council. The school district can recommend that conditions for approval be imposed. To date, the most frequent is a requirement that the developer disclose the crowded condition of the neighborhood school to prospective home buyers, along with the knowledge that children will have to be bused to a school where space is available. In addition, where the safety of children on their way to school is threatened, the school district asks that sidewalks, bus turnarounds, or safe walkways be designed into the development.

It is feasible to become more actively involved in the review process when a proposed development is likely to have significant positive or negative impact on the schools. Developers who propose new residential construction in attendance areas where enrollments have been declining and sufficient space is available in schools could be actively supported during public hearings in their bid for application approval. Conversely, when a proposed development will place increased strains on an area that is already overcrowded, or when additional buses and drivers would have to be provided to accommodate the new students, a school district representative could testify at public hearings and present specific data documenting the impacts on the school district.

This more active participation would result in at least three positive effects. First, it would improve the chance of District 4J's recommended conditions on new development being included in application approval. Second, the reviewing authorities of local general governments (Planning Commission, Hearings Official, City Council, Boundary Commission) would

become educated to the problems faced by the school district as we attempt to accommodate development on the urban fringe into existing school facilities. Third, it would encourage developers to cooperate in the early stages of their development plans in order to avoid active school district opposition when their applications come up for review.

Participation in Land Use Plans and Policy Making

The school district has participated in the update of the Comprehensive Metropolitan Plan (1990 Plan).³ The planning staffs of all three school districts were given the opportunity to review and comment in the drafts of the plan prior to their release for public review. The continued interest of the school district in participating in plan and policy formation is, perhaps, the most influential action which can be taken. The school district should continue this set of activities and should consider their expansion. Coordination of efforts between the three school districts is certainly a possibility that should be pursued since the impact on planning decision makers and the public can be maximized. Also, the coordination of efforts with other special districts, such as water, electric, and park and recreation districts may be an area worth exploring for potential cooperation.

³ A detailed discussion of 4J's evaluation and recommendations to the METRO staff are summarized in a report prepared by Rose Hesse and Mary Schoolcraft entitled, "The Update of the Comprehensive Metropolitan Plan (1990 Plan): A Report of School District 4J's Input", December 15, 1978.

CHAPTER VIII

SPECIAL ISSUES

CHAPTER VIII

SPECIAL ISSUES

The emphasis of preceding sections of this report has been on providing contextual descriptive and theoretical information which provides the framework within which school district facility siting and land use decision making should take place. The purpose of this chapter is to narrow the focus to a specific problem and show how it is likely to manifest itself in three specific areas. The major problem facing the school district is how to deal with intensive development in specific locations within the school district. There are three locations which can be anticipated to be likely to be intensively and rapidly developed.

The first location is also the most immediate. It is the phenomenal, residential development in the Willagillespie attendance area and particularly the Goodpasture Island area. Second, we discuss the effects of the building moratorium in the North Region and consider the potential impacts of a lifting of such a ban on building. Third, we examine the potential impact of the annexation of large portions of land to City of Eugene in the Willakenzie area on the distribution of enrollments in District 4J.

Goodpasture Island

In August, Greg Byrne, then a member of RD&E's planning staff, completed a cost analysis of various strategies for providing school services to the Goodpasture Island Area. In June, 1979 he revised his estimates. The discussion that follows relies heavily on Byrne's work.



MAP 19 GOODPASTURE ISLAND

Goodpasture Island is located within the Willagillespie Elementary attendance area. It is bounded on the west by the Willamette River, which also bends southeasterly to form the southern boundary along with an interstate highway. Delta Highway and Beltline Road provide the eastern and northern boundaries (see Map 19). Currently, this area contains 300 acres of vacant land. The City of Eugene Planning Department has made it quite clear that land in this area will be used for residential development. The Goodpasture Island Study, published by the city in June, 1975, recommended that the school district "explore acquisition of a school site in the north Goodpasture Island Area". At that time, the school district indicated that if the island were to be developed residentially, school services would be provided by busing children to schools where space was available. In the three years following the publishing of this report, residential development did not materialize on the island. The major obstacle was the absence of adequate sewer facilities. The planned installation of a major interceptor along the east bank of the Willamette, has provided the impetus for new residential development. A flood of major proposals have recently been received in the area. Four major projects are currently well into the application process and all indications are that they will be approved. As many as 3196 dwelling units in a mix of single family attached and condominium units have been proposed. Most dwelling types proposed represent a middle ground between single family detached units and apartment units and reflect the developer's expectation that demand for this kind of housing is likely to increase. Friedman, et al (1977), projected that by the 1980's, demand for attached single family and condominium type units will exceed supply.

As Byrne points out, it is very difficult to predict the number of children that might be generated by such development because of Eugene's limited experience with large scale units of this kind. The developers of the single family attached and condominium mix have indicated, however, that they are aiming for the young family market. As described in previous chapters, there are a number of reasons for expecting young families to adjust their sights toward this kind of housing. By far the most important reason is the high cost of housing, while smaller expected and perceived household size is also a contributory factor. Byrne (1979) bases his projections on the number of bedrooms proposed for each dwelling unit. Evidence from the school district survey of new housing, the Lane County Housing Survey, a massive survey in New Jersey (Sternlieb, 1973) and the 1970 Census all show that number of children per dwelling unit increases systematically with number of bedrooms. Byrne used information from all of the sources to develop conservative estimates of the number of children that the projects would produce. Multipliers of 0.0, 0.2609, and 0.6 were used for one-bedroom, two-bedroom, and three-bedroom units, respectively. On the basis of developer intentions, Byrne assumed that the projects would be phased over time. His estimates are as follows:

Table 6

Number of Children Projected
For Goodpasture Island Over Time

<u>Year</u>	<u>Pre-School</u>	<u>Elementary</u>	<u>Secondary</u>	<u>Total</u>
1980-81	5	4	3	12
1981-82	162	154	92	408
1982-83	137	131	79	347
1983-84	123	117	70	310
Total	427	406	244	1077

Although five new classrooms will be built at the Willagillespie Elementary by the beginning of the 1980-81 school year, there is sufficient development activity in other parts of the attendance (much nearer the school) to fill these classrooms. In fact, the decision to build new classrooms here was made before the flood of proposals for Goodpasture Island was received. More important though, is the fact that even if there is space at Willagillespie, children will have to be bused here from the Island. Most of the proposed developments are more than a mile from the school. Furthermore, busy arterials such as Goodpasture Island Road and Delta Highway are barriers to pedestrian traffic. The essence of the problem then, is whether to bus children from the island or to build a new school there.

Weighing the costs of busing vs new school construction is a task that the district is increasingly going to have to perform. Byrne's (1979) revised cost analysis for the Goodpasture Island area provides a basic methodological framework for evaluating these alternatives. The details of his methodology are not reported here, but this excellent work warrants the attention of administrators and board members. Using district-wide averages for the cost of busing one child each day, for a 180-day school year and inflating these costs by 10% per annum, Byrne estimated the cost of busing school children from Goodpasture Island for the ten year period, 1980 to 1990. Average costs of construction adjusted for inflation, the market value of land and the costs of financing, are included in the estimates of new school construction. As far as financing is concerned, a 6% annual interest rate on a twenty-year bond (School District 4J bond rating of AAA) is assumed.

Byrne's annual costs estimates for the ten year period, 1980-1990, are as follows:

Table 7
Comparison of Annual Costs Between Busing
And Building Construction For Providing Facilities
To Goodpasture Island Developments

Year	Busing To Other, Existing Schools ¹	Retiring Construction Bond Debt ²
1980-81	1,316.70	98,279.10
1981-82	42,770.70	99,168.30
1982-83	108,964.80	123,132.60
1983-84	168,220.80	136,789.20
1984-85	185,328.00	140,742.00
1985-86	204,336.00	145,134.00
1986-87	224,294.40	149,745.60
1987-88	247,104.00	155,016.00
1988-89	271,814.40	160,725.60
1989-90	298,425.60	166,874.40
Total	1,752,575.40	1,375,606.80

Byrne's estimates show that, initially, busing will be the cheaper of the options (1980-83). After 1983, however, busing costs exceed construction costs and this divergence increases up to 1980. The large annual increases in busing costs for each of the years, 1980-87, are due to the costs of acquiring new buses to accommodate phased increases of the number of children on the Island. From 1985 onwards, increases in busing costs are due to inflation alone. The annual costs of school construction are based on the costs of retiring the bond. The costs of busing secondary students are included in both sets of estimates. The total costs of busing over the ten year period is considerably higher than the cost of school construction. Furthermore, busing costs will continue as long as there are school age children in the Goodpasture Island area. On the other hand, the bond debt on new school construction is retired after 20 years and only maintenance costs remain.

¹ Figures include busing costs for both elementary and secondary students.
² Includes the costs of busing secondary students.

The difference in cost between the options is largely attributable to the assumed 10% inflation rate on transportation costs (which is conservative given the possibility of long term gasoline shortage). The major advantage of school construction using a bond technique is that funds are immediately available for use before inflation takes its toll. An additional advantage is that once the bond has been retired, the district has the possession of capital stock and land.

On the basis of this cost analysis, Byrne (1979) recommends that the school district should purchase a site on Goodpasture Island and then wait and see if residential development materializes. Alternatively, Byrne suggests that the district trade its Bond Lane site in the Willagillespie area (see Map 2) for a site on Goodpasture Island. The Bond Lane site is well suited for residential development and developers have, in the past, shown interest in it. The planning section of RD&E supports the latter recommendation, i.e. trading the Bond Lane site for a parcel of similar size on Goodpasture Island, for the following reasons:

1. There now seems little doubt that major residential development will occur on Goodpasture Island.
2. The Bond Lane site is not well located with respect to anticipated spatial distribution of children in the Willagillespie attendance area. It is unlikely the building of a school on this site will ever be justifiable.
3. Vacant land, which is very well located for serving proposed development is still available on the Island. Should the district delay, this land is likely to increase in value as the development of facilities such as a proposed athletic club make the area increasingly attractive for residential living.
4. The school district is likely to get a good price for the Bond Lane site because of its excellent location for residential development. It abuts park land and is near a golf course.
5. Members of the local neighborhood association have indicated that they would prefer to see a school built on the Island than to have children bused.
6. By acquiring a site on Goodpasture Island, the school district will be making the Island even more attractive for residential development. In this way the district is contributing to overall community goals of compact growth. Residential growth is going to take place in Eugene. Efficient accommodation of this growth can be considerably increased if the district plays an active part in concert with local planners in determining the spatial location of residential development.

In September of 1978, the school board met to discuss the Goodpasture Island problem. They decided that if residential development of Goodpasture Island materialized, school services would be provided by busing. Since that time, the development application procedures have proceeded in a manner that now makes the large scale residential development of Goodpasture Island very likely. It is our opinion that the board should consider the matter again. If there is any place in the district that the school district should acquire a site, it is on Goodpasture Island.

The Building Moratorium In The North Region

Beltline Road divides the North Region into two areas, more commonly known as the River Road area to the south, and the Santa Clara area to the north (see Map 8 on page 26). The area is comprised of approximately 7,640 acres of land of which, 1,840 acres is within River Road and 5,800 in Santa Clara. In 1970, the population of the area was 21,700 of which 12,500 lived in River Road and 9,200 in Santa Clara. By 1977, the population had increased to 27,500 and most of the increase had occurred in the Santa Clara portion. Currently, the population appears to have stabilized.

Population growth and residential development in the area is currently constrained by a number of moratoriums and prohibitions that have been imposed because of septic tank problems. Groundwater contamination in the area has been directly linked with residential use of land. A building moratorium was imposed by Lane County on June 9, 1971. This moratorium has limited residential development to those subdivisions approved before the moratorium, and to occasional minor partitioning activity. The ban on building is essentially made up of a number of moratoria. The following is a summary of governmental actions to restrain residential growth in the area:

1. High Waste Load Prohibition: This measure prevents the approval of multi-family residential developments in the region because of the high waste loads they generate.
2. Moratorium on Major Subdivisions: Prevents the approval of major subdivisions (more than four lots).
3. Partitions and Rezoning Moratorium: Prevents the creation of additional parcel through rezoning for higher density.
4. Oregon Environmental Quality Commission (EQC) Moratorium: Prevents application for permits allowing installation on subsurface disposal systems.

These moratoria have effectively brought a halt to residential development in the area, as is reflected by the building permit and development application data described in the previous chapter. Not surprisingly, the

absence of new residential development has served to exacerbate neighborhood maturation in the area. With the exception of Awbrey Park Elementary at the northern periphery, enrollment decline in elementary schools here since 1970 has been the most severe in the school district (see the discussion of enrollment patterns in District 4J in Chapter 2). The reason that Awbrey Park Elementary has experienced increases in enrollment is because many building applications prior to the imposition of the moratoriums, were made in this part of the Santa Clara area and it is also a newer neighborhood where the effects of maturation are yet to be felt.

In April, 1979, the Lane County Commissioners voted to request the lifting of the Oregon Environmental Quality Commission moratorium, i.e., the moratorium preventing application for permits for subsurface disposal systems. The Department of Environmental Quality (DEQ) has indicated that it will consider lifting the ban when a study of groundwater contamination is completed. Preliminary drafts of this groundwater study provide indications that the moratorium may be lifted in the area to the north of Beltline Road but not in the River Road area. The effect of the lifting on the ban would be to allow application for disposal system installation on already subdivided lots in the area. Note that the other three moratoria described above will still be in force so that no new lots could be created by partitioning or subdivision. Nor will high density residential development be approved. Nonetheless, there are approximately 2,000 such lots in the Santa Clara area. DEQ staff members indicate that about 40% of these would meet necessary requirements and be issued with permits. This means probable residential development of 800 lots in the Santa Clara area.

The EQC moratorium is unlikely to be lifted in the River Road area for two reasons. First, existing residential densities (although single family) are higher than elsewhere in the North Region, which increases the intensity of groundwater contamination. Second, groundwater studies are showing that groundwater contamination here is responsible for contamination of groundwater in Junction City area and other wells to the northwest. The fact that the EQC moratorium is unlikely to be lifted has implications for District 4J. Of the elementary schools in the North Region, enrollment decline is worst in those schools to the south of Beltline Road (Silver Lea, Howard, and River Road). These schools are in older neighborhoods where maturation has taken its toll. Clearly, the lifting of the moratorium, and all other moratoria here, would be beneficial from the school district's point of view. However, if none of the moratoria are lifted, and neighborhood succession does not occur, then enrollments will probably continue to decline and school closure may become a very real possibility. There is, however, a strong possibility that sewer problems in the area will be resolved. Residents are faced with several alternatives. There is a possibility of annexation to Eugene. Eugene has asserted that provision of sewers will be contingent on annexation. A recent poll in the River Road/Santa Clara area indicated that residents are hostile to annexation. However, the poll also indicates that River Road inhabitants are far less hostile to annexation than Santa Clara residents, and many favor it.

Another possibility is the formation of a special sewer district in Lane County, with the county supplying sewer services. Still another alternative is for River Road and Santa Clara to incorporate as a separate city and provide their own sewer services.

Each of these options involves differing governing bodies, with different development policies. This makes it difficult to predict the nature and location of development activity here until the sewage problem is resolved. What is quite clear is that there is a large amount of vacant land and that removal of the moratoria could result in dramatic changes in the demand for school services. Vacant lands are more numerous in the Santa Clara, Howard, and River Road attendance areas. Notably, Howard and River Road schools serve older neighborhoods where new residential development could do much to boost rapidly declining enrollment.

Large portions of land in northern Santa Clara will be designated for residential use in the 1990 Plan which is currently being revised. Of course, residential development of this land is contingent upon resolution of the septic tank problem. If the problem is resolved, District 4J does have one site (Antonio Gill) that is well located to cope with an increased demand for school services that might arise (see Map 19 on page 121). The district also has another site in the area (McKay site) which is not well located but could be used if necessary. The district may, however, face more difficult problems if some of the moratoria are maintained and others are lifted. For example, if all moratoria except the high waste load moratorium are lifted, then District 4J could probably not make use of its sites to provide services. Schools would be classified in the high waste load category.

The resolution of the septic tank problem in the North Region has implications for other parts of the school district. The revised 1990 Plan diagram targets large amounts of land in west and southwest Eugene for residential development, if land in River Road/Santa Clara is not available because of the failure to resolve the waste disposal problem. The district is not as well equipped to deal with increased demand for school services in west Eugene, as it is in the River Road/Santa Clara area. The district does not own any sites there. Furthermore, schools on the western periphery are currently operating above capacity and a considerable amount of residential development has been proposed on vacant land already designated for residential use. Metropolitan Plan Update staff members are recommending that no additional land be designated for residential use in west Eugene for at least five years. Hopefully, the problems in River Road/Santa Clara will be resolved (one way or another) by this time.

It is quite clear that the way in which the River Road/Santa Clara septic tank problem is resolved has important implications for District 4J. The major recommendation that arises from the discussion above, is that the school district become more actively involved in the decision making process than has been the case in the past. Without active school district participation, there is a strong possibility that decision will be made which adversely affect the district's ability to provide school services.

Willakenzie Island Annexations

Recent annexations of unincorporated areas within the Willakenzie area is an issue of special concern to the school district. The island annexations and concurrent rezoning to R-1 and R-2 have substantially increased the supply of vacant, buildable land suitable for residential development. The effect of the annexations upon the school district is dependent upon several factors: the rate at which residential development occurs, the type of development which occurs (single family vs multi-family), and the rate and type of development occurring on other properties in the area.

Development over an extended period of time which includes a variety of housing types could benefit the school district by stabilizing enrollments at Willakenzie and Meadowlark schools and the Sheldon Region secondary schools. Immediate residential development of the island annexations as well as other properties in the general area would inundate the schools with more students than they could accommodate. Students would have to be bused to other schools in the district where space is available, or other options explored to expand school facilities in the area. The property included in each island area considered for annexation are shown on the Map 20. All of the islands are located within the urban service boundary and are completely surrounded by the city. Due to variations in the extent of development within the eight islands (some are heavily developed already, while others are largely vacant), the islands were divided in three groups and three separate sets of annexation hearings scheduled.



**MAP 20 WILLAKENZIE ISLAND
ANNEXATION AREAS**

The potential impact upon the school district resulting from the annexation/rezoning of each of the three groups of islands is summarized in the following section.

Island Areas #1, 7, and 8

The first group of island proposed for annexation are those areas identified as Area #1, 7, and 8. (see Map 20)

Area #1: This area includes the subdivision on Balboa and Tulip Streets north of Green Acres Road and west of Gilham Road. It contains no vacant land.

Area #7: This area includes the Westward Ho area south of Harlow Road and west of Interstate 5. This includes 7.9 acres of undeveloped subdividable land and 7 buildable lots. If developed residentially at densities consistent with existing single-family housing, the annexed area could generate an estimated 47 children (0-18 yrs.). Of these, an estimated 16 will be elementary students. Development occurring within this island area will impact Washington Elementary, James Monroe Junior High, and Sheldon High Schools.

Area #8: This includes the Bar-M Willakenzie Road area south of Beltline Road and west of Interstate 5. There are 179.3 undeveloped subdividable acres and 18 buildable lots in this island. Assuming a density of five dwelling units per acre (per the Lane County Housing Survey) residential development of this property will generate approximately 914 children (0-18 yrs.), of which about one-third (320) will be elementary school pupils. Nearly two-thirds of these, or an estimated 212 students, will be within the Willakenzie Elementary attendance area. The other 106 elementary students will be generated from annexed property located within the Washington Elementary school attendance area.

Potential impacts

The annexation of Area #1 will have negligible impact upon local schools since it is already extensively subdivided. The annexation and subsequent development of Areas #7 and #8 could create enrollment pressures at the Willakenzie and Washington Elementary schools of varying degrees based on the phasing of residential development and the extent to which other development proposals in the area materialize. The Cone-Breeden property, adjacent to Willakenzie Elementary school, consists of 260 acres which will be developed as single family residential under the planned unit procedure. Breeden Brothers anticipate that the development will generate approximately 1,200 children. About 400 of these will be elementary pupils seeking space at Willakenzie Elementary. Obviously, the impact of these developments upon local schools depends on the phasing of development and the type of residential units constructed. (Multi-family units have characteristically generated half as many children as single family units)

Declining enrollments projected for the secondary schools in the area (James Monroe and Sheldon High) indicate that space should be available for students produced by new housing developed in the area. However, the cumulative effect of other development in the area will produce more elementary students than there is space for in either Willakenzie or Washington Elementary schools.

The school district could deal with these pressures by either busing pupils to schools where space is available, or, in the case of extreme pressures, by developing the school site on Coburg Road. The ability to develop this site will depend on the availability of adequate funding and on the impacts of declining enrollments elsewhere in the district.

If busing is necessary, it is likely that pupils will have to be transported right across the Sheldon Region to schools in the North or South attendance areas. The only elementary school in the Sheldon Region that will be able to absorb some of the overflow is Meadow Lark Elementary school. Thus, it may be necessary to bus elementary students from region to region.

While a development boom at the northeast periphery of the city has the potential to create major problems for the school district, it also has the potential to boost declining enrollments at Willakenzie Elementary, Meadow Lark Elementary, and at the secondary schools in the Sheldon Region. Annexation of Areas #7 and #8 could be beneficial to the district if subsequent development is phased so that its impacts are not simultaneous with those of other development proposals in the area. Furthermore, we recommend that the City of Eugene Planning Department consider the possibility of requiring a residential mix in these areas that would reduce the impact of development of schools. Multi-family residences have in the past had a considerably smaller impact on schools than single-family dwellings.

School District 4J reviewed the proposed annexation of Island Areas #1, #7, and #8, and submitted an evaluation of the above findings to the City of Eugene Planning Department to be summarized as part of the record. In addition, Rose Hesse, Planning Specialist for District 4J, testified at the public hearing on the proposed annexation/rezoning. She stated that if development of property in Area #8 coincides with the development of Cone-Breeden property to the north, elementary students will have to be bused to other schools where space is available.

Action taken:

The Lane County Boundary Commission finalized the annexation of island areas #1, #7, and #8 on April 5, 1979.

Island Areas #2, #3, and #4

The second group of islands proposed for annexation are those identified as Areas #2, #3, and #4. (See Map 20 on page 129.)

Area #2: Includes property on both sides of Goodpasture Island Road extending from approximately the south side of K-Mart south to about the intersection of Valley River Drive and Goodpasture Island Road. This 92 acre parcel includes auto dealerships, a mobile home park, gravel ponds, the property between the gravel ponds and K-Mart, and 67 vacant developable acres. Our projections are based on the suggested zoning for this area, which designated 52 acres R2 zone and 15 acres as RA zone.

If this area is completely developed at the standard density levels provided in the suggested RA and R2 zones, we estimate that approximately 423 children (0-18 yrs.) will be generated from this area. Of these approximately 141 will be elementary pupils. If the area is developed at maximum PUD densities, the area could generate as many as 707 children (0-18 yrs.), of which approximately 236 would be elementary pupils. Thus, the number of elementary students anticipated from future development of this annexation ranges from 141 to 236. These students would all have to be bused due to the hazardous nature of Delta Highway.

Area #3: Includes a single parcel of land located between Delta Highway and Valley River, which contains about 3.29 acres. The property is developed with several older single family residences. The proposed zoning is for commercial, rather than residential use.

Area #4: Includes property on both sides of Country Club Road extending from Willagillespie Road east to Fairway Loop, as well as property adjacent to Elwood Drive, Sand Avenue, and Pool Street. This area includes both developed and undeveloped property. The existing development within this area includes the Eugene Country Club, apartments/condominiums located north of Country Club Road, professional and general office development along portions of Country Club Road and between Willagillespie Road and Delta Highway, and single family residences and duplexes located in a subdivision off Elwood Drive and on various parcels throughout the area. The vacant property is interspersed among the developed parcels. The existing residential development consists of 52 single family residences, 3 duplexes (6 units), and 142 apartments/condominiums. The total net land area (excluding streets) included is approximately 270 acres. Over 50% of that area (approximately 143 acres) is owned by the Eugene Country Club.

The recommended zoning for the remaining vacant acreage is: R-1 zoning for the 4-5 existing single family lots; RG garden apartment district for approximately 60-75 acres; RP residential professional for approximately 25 acres.

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The RG garden apartment district provisions allow greater flexibility than other residential zoning categories, in that the required lot area per dwelling unit is based on room count and percent of lot coverage. Thus, the developer may increase the number of dwelling units permissible by reducing the percent of lot covered by the structure. This provides an incentive for high rise structures, which have characteristically attracted very few families with school age children. We can only speculate whether or not developers will respond to RG zoning with family oriented garden apartments or adult oriented high rise developments. Since the type of development is a determining factor on the number of children likely to be generated, much more accurate projections can be provided from specific development referrals.

Potential Impacts

Area #3, located adjacent to Valley River Inn, is recommended for future commercial development. Therefore, annexation of this island will not impact local schools. Areas #2 and #4 include a substantial amount of vacant building acreage with various residential density zones proposed. These islands are both located within the same school attendance areas and students generated from residential developments in these annexations would impact Willagillespie Elementary, Cal Young Junior High, and Sheldon High Schools.

The estimated number of students anticipated from Island Areas #2 and #4 varies according to acreage (60 acres, 75 acres zoned RG) and according to the density of dwelling units per acre. Given 60 acres zoned RG and standard density, we estimate that between 343-605 elementary students will be generated. At PUD densities the number of elementary students could range from 387-487 students.

Given 75 acres zoned RG, approximately 402-516 elementary students would be generated from development at standard residential density. At PUD densities, the number of elementary students estimated ranges from 455-572 students. These estimates are based on the acreage of vacant land rather than existing development proposals.

These figures illustrate the impact upon the schools based on total development of the area. Realistically, it is not likely that the entire vacant acreage will be developed all at one time. The impact on the school depends on the phasing of the residential development. Rapid, unregulated development of Areas #2 and #4 will cause major problems for the school district. However, based on prior board determination not to construct school facilities on Goodpasture Island, all children generated from development in Island Area #2 would have to be bused to other schools.

Elementary school children generated from development in Island Area #4 would attend Willagillespie school until it reached program capacity. Willagillespie Elementary School increased its program capacity to 490 by

adding five portable classrooms this year. However, this was largely in response to the numerous new residential developments already planned and approved in the area. Willagillespie Elementary School will not be able to accommodate all the students generated from the development of the annexed island areas.

The secondary schools in the area (Cal Young and Sheldon) presently have declining enrollments and should have sufficient space for additional students. The real problem will be providing school services to the elementary students generated from these island areas. The options for Island Area #2 are discussed in depth in the analysis of Goodpasture Island, (see page 121).

Much of the public discussion regarding the annexation of Island Areas #2, #3, and #4, revolved around the availability of sewers to the area. Under the reduced federal funding formula, construction of the east bank interception is to be completed in the following stages:

- Extension of sewer lines from the Willakenzie pump station to Delta Highway will be constructed during the summer of 1980.
- Extension of line from Delta Highway past Coburg Road during the 1981 construction season.
- Extension east of Coburg Road would commence in 1982.

This construction schedule would allow sewer service to Areas #2 and #3 following the 1980 construction and service to Area #4 following the 1981 construction. If sewers are not available, development can occur with septic systems, provided the septic system receives DEQ approval. Thus, annexation of Area #4 would result in residential development of one type or another.

Action taken

The Lane County Boundary Commission finalized the annexation of island areas #2, #3, and #4 on September 6, 1979.

Island Areas #5 and #6

Area #5: This area includes the Alton Baker Park and Autzen Stadium. It is not likely that annexation of this area will have an impact upon local schools.

Area #6: This area generally includes the property between Interstate 105 and Centennial Boulevard and between the Moose Lodge and Interstate 5. Most of the area is developed as the Chase Gardens and greenhouses, with some vacant property and scattered residences between Centennial and Interstate 105. Sewer service, which will influence the timing of residential development, in this area is dependent upon the east bank trunk sewer construction.

Action taken

The annexation/rezoning hearing procedure for Island Areas #5 and #6 is scheduled to begin during the summer of 1979. Information on the vacant acreage and proposed zoning for these areas has not yet been released. There appears to be limited vacant land suitable for future residential development. School-age children from development of this area would attend Washington Elementary, James Monroe Junior High, and Sheldon High Schools. In accordance with district policy, bus transportation would be provided for these students, located beyond a one-mile radius of the elementary school, and beyond a two-mile radius of the secondary schools.

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CHAPTER IX

CONCLUSIONS AND RECOMMENDATIONS

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This report has dealt with a wide range of issues associated with facilities siting and planning. The thread that binds all these issues together is our emphasis on the existing and potential demand for school services and the school district's ability to provide these services. The purpose of this chapter is to summarize the major conclusions of the report and to make recommendations for action. These conclusions and recommendations are organized into three categories. In the first category we identify areas in which further research will considerably increase our ability to understand and predict variations in the demand for school services. The second category includes issues which have implications for district policy and recommendations are made concerning the way in which the district should approach facility related problems. Finally, in the third category, recommendations for action concerning the buying, selling, and siting of school facilities are made.

Recommendations for Further Research

Conclusion: There will be, on an ongoing basis questions about land use data and impact on the school district, such as preferences of families for the relationship of enrollment to concepts such as neighborhood influence of the economy on housing, etc. At present, answers can only be extrapolated from existing data from the city or county or from speculations of expects. Well controlled studies of the local community, tailored to the specific needs of the school district are needed.

Recommendation: A systematic and ongoing program of research into these topics should be planned by the school district. Where possible, these studies should be coordinated with local governmental agencies.

Conclusion: Neighborhood maturation is a viable concept in Eugene. There is substantial empirical evidence supporting its basic premises. While we do know that neighborhoods undergo a maturation process during which enrollments steadily decline, we do not know what happens to enrollments in the neighborhood after it has matured. The answer to this question is of critical importance. If we can expect enrollments to continue to decline, then school closure in older neighborhoods may be necessary. If, on the other hand, revitalization, succession, or conversion leads to increases in enrollment after maturation, such closure may not be warranted. Available data for Eugene suggest that continued decline in older neighborhoods is likely.

Recommendation: An in-depth study of this very important question should be a high priority for the school district. Developing a research design which will appropriately address this question will be a complex task, but the importance of the question is such that the district cannot afford to overlook it. A starting point could be to select neighborhoods with housing stock older than twenty years and a history of enrollment decline. The study should then consider the following:

- a. The extent of conversion of single family homes to multi-family of other uses.
- b. The length of time current inhabitants of the neighborhood have lived there and how long they plan to stay.
- c. The amount of sales activity in the neighborhood and the characteristics of the sellers and buyers.
- d. The neighborhood and general metropolitan plans for the neighborhood.
- e. Local government attempts to stimulate certain types of land use or growth and the success of these attempts.
- f. Current zoning and applications for variances and rezones. The magnitude of rezone application activity might be used as an indicator of conversion.
- g. The incidence of rental housing and the characteristics of renters.

Conclusion: An NIE grant team comprised of planning staff members from District 4J and consultants from L-COG, have developed a methodology for projecting long term trends for small geographic areas. The methodology makes use of demographic and land use planning information to project the number and age of single family units in various parts of the city. The age of the single family units determines the number of children who will be generated by each unit at any point. This means that the methodology is closely linked to theory of maturation which has been found to be relevant in Eugene. The methodology has a number of limitations and is in the process of being refined. Intelligent use of the tool can considerably enhance facilities planning in Eugene. The methodology has been applied in Eugene and projections of enrollment trends made for 1990.

Recommendations: Because of the methodology's potential, the district should continue its efforts to refine it. Such refinement should involve:

- a. The inclusion of additional land use data into the model such as the likelihood of certain areas of vacant land use been developed before and in preference to other areas.
- b. Adapting the model to allow intermediate projections (once every three years). This would allow prediction of changing enrollment patterns through time and allow more sophisticated facilities planning.

The district should apply the refined model to Eugene as soon as the 1990 Update process is complete and areas for future development have been designated.

Conclusion: There is little evidence in Eugene of major shifts in demand away from single family housing toward multi-family housing on the part of young families. Evidence from the Lane County Survey of Housing does, however, show that duplex apartments are producing substantially more children than apartments. Experts predict that the preference of families may switch to higher density dwellings in the next few years. If young families are opting for multi-plex and garden type apartments because of the high cost of single family housing, then the distribution of demand for school services within the district may change.

Recommendation: A study should be undertaken which explicitly examines changes in the child-bearing characteristics of different housing types in Eugene. Multi-plex and garden apartment type housing should be a priority in the study. These characteristics should be carefully monitored both at present and in the future.

Conclusion: Development application data suggests that the location of new multi-family housing is shifting away from the central areas of Eugene to the periphery. This further suggests that even if the demand for housing by young families shifts away from single family detached homes to multi-family homes, these families will still be located to the periphery, thereby exacerbating the capacity dilemma.

Recommendation: The district should conduct a study of the changing location of multi-family housing in Eugene and its implications for the distribution of enrollments.

Recommendations For Policy And The District's Approach
To Facilities Planning

Conclusion: The most significant problem facing School District 4J as far as the provision of school services and facilities is concerned is the capacity dilemma. The disparity between the location of school facilities and the location of demand for school services is likely to continue. Enrollments in peripheral areas will increase while enrollments in central areas will probably remain stable or decrease further. There are a wide range of options for dealing with the capacity dilemma. Some of these options are appropriate in some cases and not in others. District administrators have made use of many of these options and have adopted flexible policies for dealing with these issues. Their thinking has, however, been dominated by a "no new construction while enrollments decline" mentality. Yet, where substantial numbers of children are likely to be generated by large scale residential development, new school construction may be cheaper than busing.

Recommendation: School administrators should evaluate problems created by the capacity dilemma on a case-by-case basis and choose the most appropriate option from the wide range of such options. Where rapid and large scale development is likely to produce large numbers of children, new school construction should be seriously considered.

Conclusion: While School District 4J is currently experiencing declining enrollments district wide, there is reason to believe that enrollments will increase overall through the mid-1980's. The large number of women in the fertile age cohort, expected increases in fertility rates, and continued immigration are expected to boost enrollments.

Recommendation: School district administrators and board members should be careful not to adopt a mind set geared toward steady enrollment decline and be unprepared to respond to increases in enrollment district wide. A similar mind set, this time toward enrollment increase, afflicted school administrators in the late 1960's and resulted in a very sluggish response to enrollment decline.

Recommendation: District 4J should continue to be actively involved in all aspects of land use planning and particularly in the development of local government comprehensive plans. More specifically, the district should continue its involvement in the following comprehensive plans which are currently being developed:

- a. The 1990 Eugene-Springfield Metropolitan Plan, and
- b. The Spencer Creek Subarea Plan

Conclusion: The school district survey of new housing (1979) establishes that new housing produces twice as many children on average than housing for the city of Eugene as a whole. New residential development, then, has significant implications for District 4J. The district has an opportunity to affect the approval of residential development at the referral stage of the review process.

Recommendation: The district should continue to be actively involved in the review process. The district should actively support those development programs in areas where enrollments are declining, and actively opposing proposals in crowded attendance areas.

Recommendations for Action

Conclusion: As many as 3,196 dwelling units have been proposed on Goodpasture Island and indications are that these applications will be successful. Conservative estimates indicate that this residential development will produce 427 pre-school, 406 elementary, and 244 secondary students by 1984. Willagillespie Elementary will not be able to accommodate these children. The only option other than building a school on Goodpasture Island is to bus these children to schools where space is available. Byrne (1979) has shown that new school construction is cheaper than busing over a 10-year period. The reason is that financing methods available to the district make new school construction much less vulnerable to inflation than is the case with busing.

Recommendation: The school district should reconsider its September, 1978 decision not to acquire a site on Goodpasture Island. Vacant land, which is extremely well located for supplying school services to the whole Island is available now, but is likely to increase in price as features such as the completion of the Eugene Athletic Club makes this land attractive for residential development. The district should acquire a site on Goodpasture Island and then adopt a wait-and-see attitude before building a new school. The district should consider all available options for acquiring a site such as developer dedications and site trading.

Conclusion: The Bond Lane site in the Willagillespie attendance area is not well suited to accommodate new residential development proposed in the area. It is, nonetheless, very suitable for residential development because it abuts parkland and is near a golf course. These features increase the value of the site, especially if it is sold for residential development.

Recommendation: The school district should either sell the Bond Lane site or trade it for a better located site on Goodpasture Island. Local developers have shown an interest in such a trade.

Conclusion: The McKay site is poorly located with respect to anticipated residential development. The site is unlikely to become the focus of a new residential neighborhood and is also located on a flood plain.

Recommendation: The district should sell the McKay site. If the building moratorium in the River Road/Santa Clara area is lifted, then the district should consider acquiring a better located site in this area.

Conclusion: The ban on building in the River Road/Santa Clara area is in fact comprised of a number of moratoria. The lifting of any of these moratoria while others remain in effect can result in a situation where considerable new residential development will be allowed in the area while the school district would not be allowed to build schools in it's sites because of the continued imposition of some of the moratoria such as the High Waste Load Prohibition.

Recommendation: The district should insure that participants in the decision making process are aware of the implications that the lifting of some moratoria and the continuance of others has for the school district.

Conclusion: The annexation of large portions of land (the Willakenzie Islands) in the Sheldon Region to the city of Eugene, has the potential to create major enrollment pressures there. If all the land is developed far more pupils will be generated than can be accommodated in local schools, but the impacts on schools depends ultimately on the phasing of this development over time.

Recommendation: The district should monitor residential development applications in this area very carefully. The district should push for mixture of residential types in major development applications to lessen the initial impacts and to mitigate subsequent maturation.

APPENDIX A

APPENDIX A

Statistical Description Of The Results Of Long Term Enrollment Projection Methodology

The Results

Chapter 6 contains an abbreviated version of the results of a newly developed long term enrollment projection methodology. This method depends upon land use variables which are projected ten years in the future in order to project the enrollment patterns which are likely to exist at that time. The purpose of this appendix is to present the detailed statistical results of the method. Chapter 6 contains a simplified description and graphic representations of the results.

The methodology for long term projections involves the use of regression to predict which schools within the school district will decline and which schools will grow over a 15-year period. This methodology focuses on the trends occurring in the neighborhoods and attempts to develop a profile of neighborhood factors which are associated with declining school enrollments. As was described in Chapter 6, there are assumptions and limitations to the method. These are described on pages - and will not be repeated here for the sake of brevity.

The first step was to generate a "definition" of a declining school. This was defined in terms of a downward linear trend in enrollment. The next step was to use land use variables to generate a description of the type of neighborhood which will have declining enrollments. This was done by means of a step-wise regression. In the results of the step-wise regression, most relevant land use factors were determined. After determining which variables best described the enrollment trend, values for those variables for each school attendance area were projected for the year 1990. This was possible due to land use planning efforts going on in the Eugene-Springfield area. The regression equation was then utilized on the projected data to determine the relative enrollment trends in 1990.

The long term enrollment projection methodology produced an indication of the slope of the linear trend, thereby indicating if the school will be declining or growing at the end of the 15-year period. The methodology is a modification of a linear regression enrollment projection technique in which land use factors were added. The method is reviewed, step-by-step, giving the results of each step.

Step 1
Identification Of Existing Trends

Historical enrollment data for the years 1970-1977 are analyzed to determine whether enrollments are declining, remaining stable or increasing. Linear regression is used to establish these trends and the results are summarized in Table 10. The statistic "t" is used to indicate both the magnitude and direction of the trend. If "t" is negative, then enrollment is declining; if "t" is close to zero, then enrollment is stable; and if "t" is positive, enrollment is increasing. Table 10 shows clearly that most schools in the district are experiencing decline. Only five schools have increasing enrollments. Four of these are peripheral schools.

Table 8
Values of "t" for Each Attendance Area
Using 1970-77 Enrollment Data

<u>ELEMENTARY SCHOOL</u>	<u>"t"</u>
Bailey Hill	12.64
McCornack	5.28
Magladry	1.83
Condon	1.58
Ambrey Park	0.83
Edison	-0.20
Edgewood	-1.00
Patterson	-1.31
Fox Hollow	-1.51
Crest Drive	-1.57
Willagillespie	-1.60
Whiteaker	-1.89
Adams	-2.26
Westmoreland	-2.54
Lincoln	-3.10
Harris	-3.11
Gilham	-3.54
Meadowlark	-4.66
Washington	-4.82
Howard	-5.11
Santa Clara	-5.32
Parker	-5.71
Willard	-5.86
Dunn	-6.12
Silver Lea	-7.07
Willakenzie	-7.76
Laurel Hill	-8.52
Spring Creek	-8.72

Step 2
Link Enrollment Trends And Neighborhood Characteristics

A number of potential land use variables were entered into a step-wise regression with the enrollment variables. These land use variables are listed on Table 11. The results showed that four variables accounted for most of the variance. They were (in order of relative importance):

1. Percent of single family units built since 1970 (1975-76)
2. Percent of single family units built 1960-1970
3. Percent of single family units with assessed value over \$40,000
4. Net density in dwelling units per acre

Of these four variables, only the first two accounted for a practically significant portion of the variance.

Table 9
Land Use Variables

-
-
1. Percent of total land area which is residential
 2. Percent of total land area which is vacant
 3. Number of vacant, low density-zoned lots
 4. Number of vacant, residentially-zoned acres
 5. Percent of all residential units which are single family
 6. Net residential density (dwellings units per acre)
 7. Average value of single family units
 8. Percent of single family units assessed under \$20,000
 9. Percent of single family units assessed under \$40,000
 10. Percent of single family units built prior to 1940
 11. Percent of single family units built 1940-50
 12. Percent of single family units built 1950-60
 13. Percent of single family units built 1960-70
 14. Percent of single family units built after 1970
 15. Average number of students per dwelling unit per structure type

Step 3
Projection Into The Future

In this final step, two things were done. Each of the explanatory variables was projected into the future, and a regression equation was utilized on the projected value to determine a relative enrollment trend. This was again expressed on a value of "t." Table 12 shows the projected values of each explanatory variable for each elementary school.

Table 10
Values of the Explanatory Variables

ELEMENTARY SCHOOL	A Percent Single Family 1983-1989	B Percent Single Family 1973-1983	C Percent Single Family \$40,000	D Net Density
110 Bailey Hill	20	55	38	4.6
265 McCormack	0	37	38	6.4
328 Maglady	17	55	64	3.5
140 Condon	0	11	33	23.7
109 Aubrey Park	34	15	23	
170 Edison	5	12	31	5.9
167 Edgewood	7	44	57	5.3
216 Patterson	0	7	2	11.7
189 Fox Hollow	44	17	50	3.0
144 Crest Drive	17	31	55	2.9
364 Willagillespie	12	36	31	4.9
361 Whiteaker	1	9	3	14.2
104 Adams	0	3	36	6.0
358 Westmoreland	0	52	33	8.9
237 Lincoln	0	1	5	39.1
207 Harris	0	32	26	5.1
193 Gilham	58	17	24	4.5
267 Meadowlark	0	19	36	5.1
352 Washington	10	19	27	4.9
213 Howard	28	2	14	
307 River Road	31	1	9	
316 Santa Clara	34	6	31	
176 Parker	41	29	21	5.0
191 Willard	0	9	25	7.5
164 Dunn	1	17	20	5.3
319 Silver Lea	6	2	13	
367 Willakenzie	41	3	9	6.1
231 Laurel Hill	51	17	13	3.6
326 Spring Creek	39	9	27	

These projected values were again entered into a regression and a projected value of "t" obtained. Table 13 shows the projected values of "t" for each school in rank order increasing to decreasing schools. The land use variables explain 77% (R square = .7763) of the variations in enrollments.

Table 11

Ranking of Projected Values of "t"

<u>All Schools</u>	
Gilham	9.9
Fox Hollow	8.8
Laurel Hill	8.5
Spring Creek	6.7
Willakenzie	6.5
Santa Clara	6.3
River Road	4.4
Awbrey Park	4.3
Howard	4.0
Parker	3.7
Crest Drive	0.6
Adams	-1.0
Silver Lea	-1.5
Edison	-1.6
Washington	-1.8
Magladry	-2.2
Condon	-2.5
Willard	-2.9
Meadowlark	-3.4
Lincoln	-3.5
Willagillespie	-3.5
Edgewood	-3.6
Bailey Hill	-3.8
Dunn	-4.3
Whiteaker	-4.6
Patterson	-4.7
McCornack	-5.9
Harris	-6.2
Westmoreland	-8.6

At this point, the NIE team realized that uncontrolled factors such as alternative schools could have affected the projections. They, therefore, repeated the regression to determine their relative effect by eliminating schools which could be affected. Three additional estimates were made. In the first set, both alternative schools and all schools in the River Road/Santa Clara area are omitted. Alternative schools are omitted because enrollment in these schools is unlikely to be significantly related to land use variables and neighborhood characteristics. Enrollment in alternatives depends more on the popularity of the program offerings. River Road/Santa

Clara schools are excluded because a building moratorium in the area since the early 1970's has effectively prevented significant residential development activity in the area. But this does not mean changes in enrollments in River Road/Santa Clara schools are not related to land use activity or inactivity. Decline in these schools may well be significantly related to the absence of subdivision activity. It is possible that neighborhood maturation is exacerbated by the ban on building in the area. Table 14 shows the relative rank order of each elementary school when the alternative population and schools in River Road/Santa Clara were eliminated. When River Road/Santa Clara and the alternative schools are excluded, the land use variables explain 88% ($R^2 = .8845$) of the variation in enrollments.

Table 12
Ranking of Projected Values of "t"

No Alternatives/River Road

Gilham	14.8
Laurel Hill	12.3
Willakenzie	10.6
Fox Hollow	9.8
Parker	7.0
Crest Drive	-1.9
Washington	-2.7
Lincoln	-3.8
Bailey Hill	-4.2
Willagillespie	-4.4
Whiteaker	-4.6
Patterson	-4.7
Willard	-4.9
Magladry	-5.3
Dunn	-5.7
Meadowlark	-6.3
Harris	-8.1
McCornack	-8.8
Westmoreland	-10.9

In the second set, only the alternative schools were eliminated. Table 15 shows the relative rank order of the schools. When the alternative schools are excluded, the land use variation explains 76% ($R^2 = .7556$) of the variation in enrollments.

In the third set, the River Road/Santa Clara schools were eliminated. Table 16 shows the relative rank order of the schools. When these schools were excluded, the land use variables explain 83% ($R^2 = .8344$) of the variation in enrollments.

Table 13

Ranking of Projected Values of
"t" - No. Alternatives

Table 15

Ranking of Projected Values of "t"

No. Alternatives

Gilham	12.1
Laurel Hill	10.0
Willakenzie	8.9
Fox Hollow	7.8
Spring Creek	7.4
Santa Clara	6.3
River Road	6.1
Parker	5.3
Awbrey Park	5.1
Howard	5.1
Silver Lea	-1.6
Crest Drive	-2.3
Washington	-2.7
Lincoln	-3.3
Whiteaker	-4.1
Patterson	-4.1
Willard	-4.4
Willagillespie	-4.5
Bailey Hill	-4.7
Dunn	-5.2
Magladry	-5.6
Meadowlark	-5.8
Harris	-7.6
McCornack	-8.3
Westmoreland	-10.3

Table 14

Ranking of Projected Values of
"t" - No. River Road

Table 16

Ranking of Projected Values of "t"

No. River Road Schools

Gilham	12.3
Fox Hollow	9.8
Laurel Hill	8.8
Willakenzie	7.9
Parker	5.4
Lincoln	4.9
Condon	1.6
Crest Drive	0.1
Magladry	-1.9
Washington	-2.4
Adams	-2.4
Edison	-2.5
Bailey Hill	-3.1
Whiteaker	-3.4
Willagillespie	-3.6
Edgewood	-3.7
Willard	-3.7
Patterson	-4.2
Meadowlark	-4.7
Dunn	-5.5
McCornack	-6.3
Harris	-7.2
Westmoreland	-7.9

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